April, 1925
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Wire Reinforcing Fabric in Buildings

Triangle Mesh Fabric
Electric Weld Fabric

American Steel & Wire Company

218-11.

Wire Fabric Concrete Reinforcement

ILLUSTRATIONS SUGGESTIONS AND TABLES COVERING ITS USE IN BUILDING CONSTRUCTION

Made by

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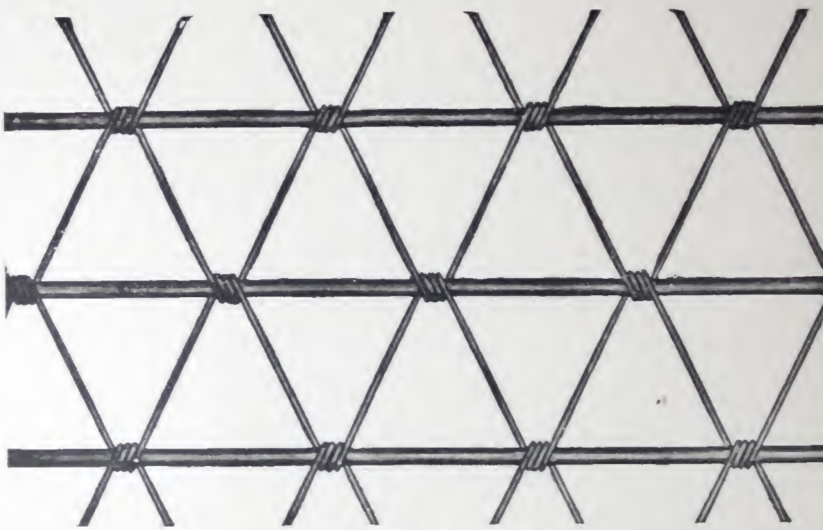
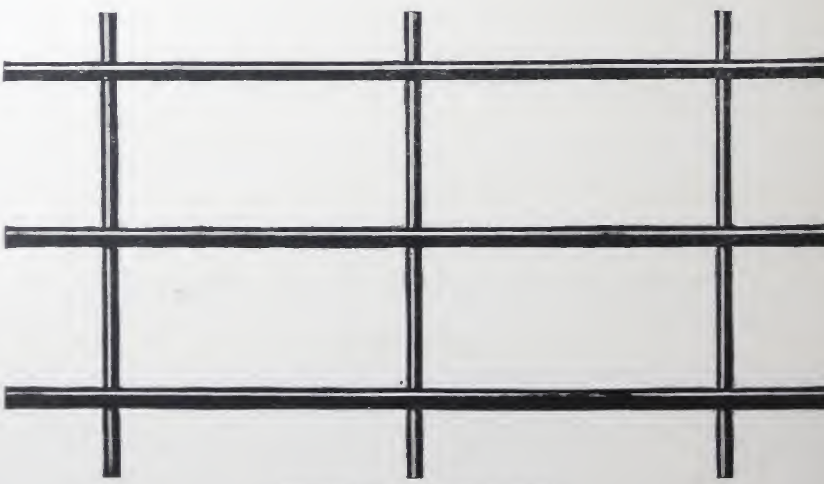


Triangle Mesh Reinforcement.



American Electric Weld Fabric.

Index

Reprinted September, 1925.

Triangle Mesh Reinforcement and American Electric Weld Fabric can be economically used in some form in every building constructed.

Use it to reinforce the concrete floors and roofs,
- the concrete walls (interior and exterior),
- the basement floors and other floors that rest upon the ground,
- the concrete wearing course over concrete floors,
- the concrete fireproofing of all steel frame work,
- the concrete side walks, drive ways, streets and highways,
- the concrete sewers,
- the concrete coal bins,
- the concrete silo,
- the concrete water tanks,
- the concrete oil tanks,
- the concrete ships and barges,
- the revetment in river work,
- the concrete lining in reservoirs,
- the concrete chimney,
- the flat slab beamless floors,
- the retaining walls.

Introductory

THIS catalog contains a description of wire fabric concrete reinforcement and illustrates and explains its use in various types of building construction.

For many classes of work wire fabric is more efficient and more economical than loose bars.

Wire is a product resulting from drawing a hot rolled rod through a die which mechanically reduces the size and increases the length. The yield point and the ultimate strength is increased 50 to 100 per cent depending upon the amount of drawing or reduction. The finished wire is then partially annealed to reduce the stiffness thereby making a fabric of high yield point and tensile strength that is still sufficiently flexible to insure ease in handling.

The several wires making up the fabric are not injured in any way nor is the yield point or tensile strength reduced during the process of manufacture.

The yield point of the wire is at least 50 per cent greater than the yield point of reinforcing bars; therefore, based on strength of the steel alone, wire fabric is more efficient by 50 per cent than bars of equivalent area.

The bonding area of wire fabric is several times greater than that for a bar of an equal cross sectional area. This can be shown by the simple example of comparing the bond area or surface of four ½-inch square bars with that for one 1-inch square bar which has a sectional area equal to the four ½-inch bars. The four ½-inch bars have a total bonding surface of twice that for the 1-inch bar. Comparing sixteen ¼-inch square bars with one 1-inch bar shows the total bonding surface to be four times that for the 1-inch bar.

This explains in part why better results are obtained with a close meshed fabric than with bars.

When comparing costs of wire fabric and bars for any particular job, the comparison is not complete unless the costs to install are included. For the average floor job wire fabric can be installed in the forms at a cost of about 10 to 20 per cent of that for bars. See P. 9 for comparative designs of a typical floor panel.

Kaw River Improvement, Kansas City, Mo., 2,000,000 Square Feet American Steel & Wire Company's Triangle Mesh Reinforcement Used in this Work.

Fig. 1. Triangle Mesh Reinforcement used in the concrete floor slabs of the Norwood Sash & Door Co., Norwood, Ohio.
Note its use with concrete supporting beams.

Fig. 2. Triangle Mesh Reinforcement for the concrete floor slabs of the Shillitoh Stables, Cincinnati, O. Note its use with concrete supporting beams and note particularly the ease with which the mesh reinforcement is placed in position.

Wire Fabric Reinforcement for Short Span Slabs Supported by Concrete Beams

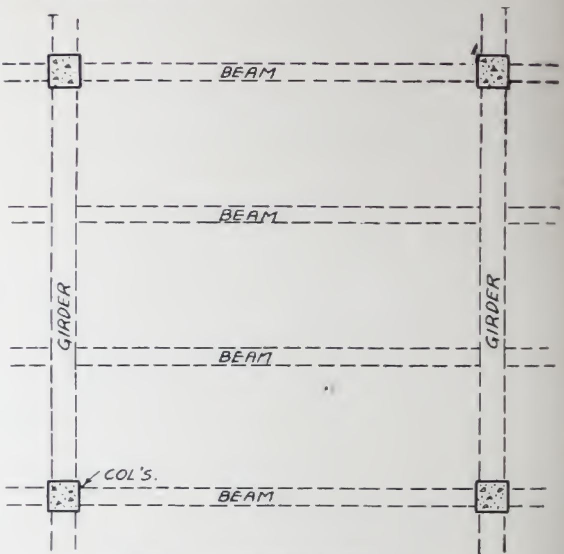


Fig. 3. Three spans per panel.

The short span type of floor construction with its reinforced concrete slabs supported by reinforced concrete beams, girders and columns has demonstrated its superiority over the long span type for many kinds of buildings.

As a general rule three spans per panel (Fig. 3) will be more economical for the average building than two spans per panel (Fig. 4), but an estimate of the cost per panel of the two types should be figured before deciding definitely which shall be used.

Wire Fabric Reinforcement is the most economical form of slab reinforcement as can easily be demonstrated by making a comparative estimate. Even with high priced labor the placing cost will not exceed $2.00 per ton for the mesh as compared with $15.00 to $20.00 per ton for equivalent bars.

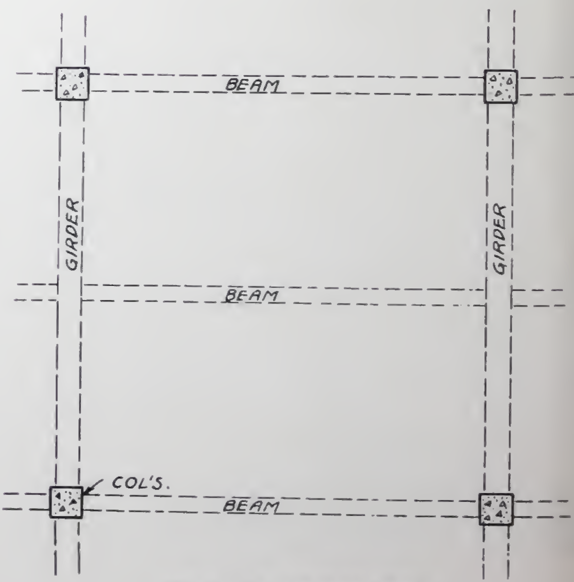


Fig. 4. Two spans per panel.

Design Suggestions, Cost, Etc.

From an economical standpoint it is very desirable to have the same amount of reinforcement and the same thickness of slab in the end as in the intermediate slabs; the inspection requirements are less and in fact the entire installation costs are reduced. This is true whether bars or mesh constitute the slab reinforcement. The construction of the forms can be seldom made exactly uniform for the end and intermediate panels regardless of the relative lengths of spans "A" and "B" therefore the cost of forms should not be considered.

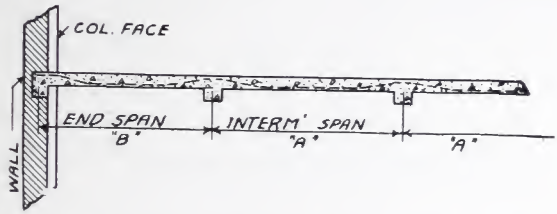


Fig. 5. Uniform reinforcement and thickness of slab in intermediate and end slabs. Span "B" must not be greater than $9/10 \times$ "A."

In order for span "B" to have resisting moments equal to span "A" assuming the same reinforcement and same thickness of slab in both cases the length of span "B" must not be more than $\frac{9}{10}$ times "A."

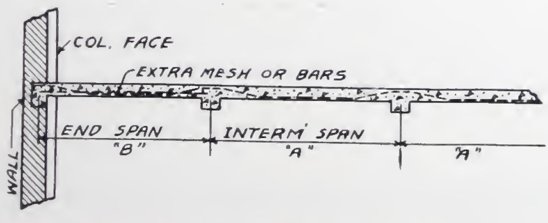


Fig. 6. Scheme for increasing the reinforcement in the end spans.

Under certain conditions it may be found advisable to so space the columns as to require a greater or less amount of reinforcement or a greater or less thickness of slab for the end spans than for the intermediate spans. If the reinforcement requirements are greater add sufficient bars or another layer of mesh to make up the difference. We recommend the spacing of these bars to be not more than 24 inches.

Supporting Wire Fabric Reinforcement Over Concrete Beams

The correct location of the reinforcing mesh in the top portion of slabs over concrete beams can be easily and cheaply obtained by means of precast concrete blocks as shown in Fig 7.

These blocks should have a height about 1¼ or 1½ inches less than the full thickness of the slab. The length may be any convenient amount such as one or

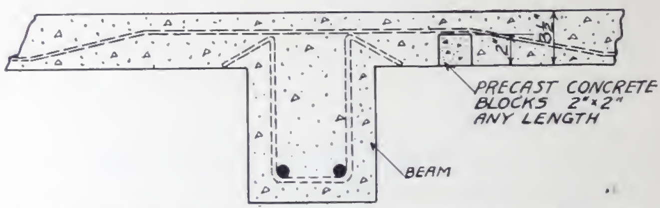


Fig. 7. Showing inexpensive method of supporting Wire Fabric Reinforcement over concrete beams.

two feet or such lengths as readily form by breaking long strips of the blocks. The mesh should be supported for at least one third of its width. These blocks will stay in approximately correct position without any means of attachment to the reinforcing mesh or to the forms.

For short spans (about 8 feet or less) these blocks will be required on one side only of the beams. For spans greater than 8 feet use blocks on both sides.

Detailing Widths of Mesh

For estimating purposes where accuracy is unnecessary provided the estimate is on the safe side it is permissible to assume that the mesh required will equal in square feet the actual area of the floor slab; as a matter of fact the amount of mesh needed will be less than that, and at the same time a more efficient and more economical layout is possible. In the first place a two inch lap along the

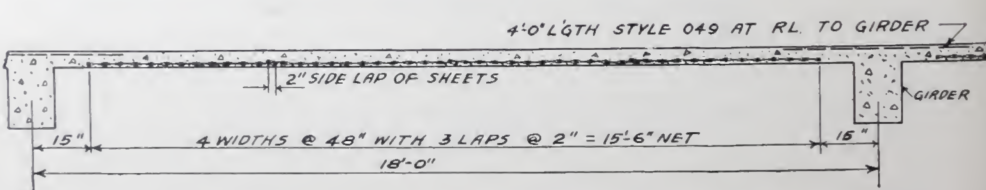
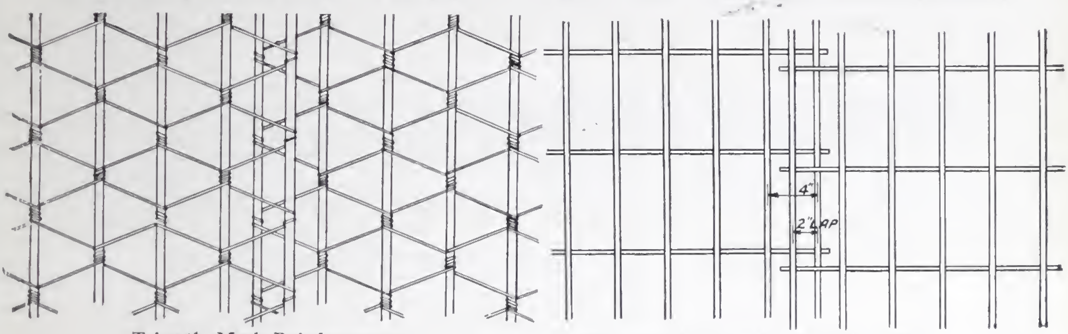


Fig. 8. Detailing Widths of Mesh and showing extra strip of mesh over the girders.

sides of the sheets is sufficient to develop the full strength of the reinforcement; more than that is a waste of material. This two inch lap means a lap of the outside (or selvage) longitudinal wires as shown in Fig. 9. The cross wires that extend beyond the longitudinals are not counted in as part of the lap.

A suggested detail for the amount and location of Triangle Mesh Reinforcement is shown in Fig. 8. Providing a short strip of light weight fabric (style 049 or 053P) is placed near the top of the slab over the girders with the main longitudinal wires at right angles to the direction of the girders it is not only unnecessary but a waste of material to require that the main reinforcement of



Triangle Mesh Reinforcement. American Electrically Welded Fabric.

Fig. 9. Shows Wire Fabric as it actually appears with a side lap of 2 inches.

the slabs entirely cover the space between and over the girders. The distance between the center line of the girder and the edge of the reinforcing fabric can be any amount up to about 20 inches without reducing the strength of the structure.

Comparative Designs

The following designs show conclusively that Triangle Mesh Reinforcement is more economical than bars for a typical short span slab. Assuming average

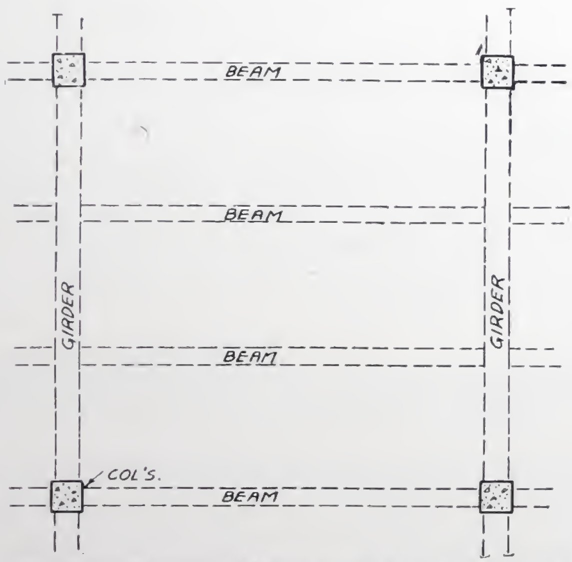


Fig. 10. Showing location of beams and girders in typical panel.

conditions the cost of placing the mesh in the forms ready for concreting will not exceed $2.00 per ton while the cost of bending and placing bars will be at least $15.00 per ton and very often it exceeds this by $5.00 or $10.00 per ton.

EXAMPLE:—Assume a typical floor slab as shown in Fig. 10 with the spacing between columns of 18 feet each way, span of slabs 6 feet center to center of supporting beams, live load 250 lbs. per square foot, thickness of slab 4 inches, maximum working stress in the concrete 700 lbs. per square inch. For the bar design use ¼″ deformed bars at 12 inch centers for temperature reinforcement.

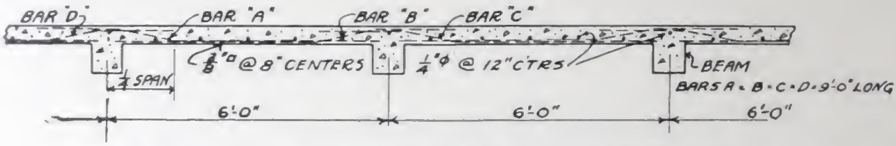


Fig. 11. Section through beams and slabs showing typical bar design for slabs.

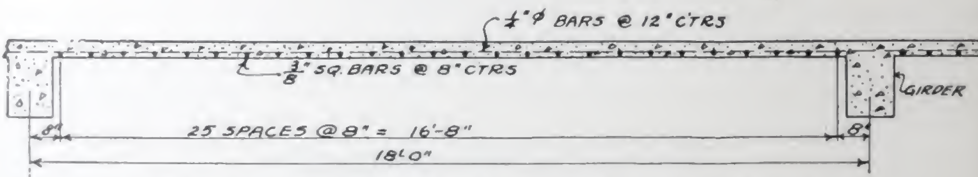


Fig. 12. Section through girders and slabs showing typical bar design or slabs.

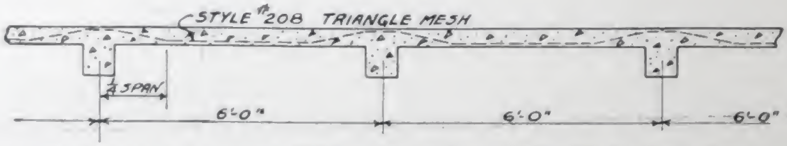


Fig. 13. Section through beam and slabs showing typical mesh design for slabs.

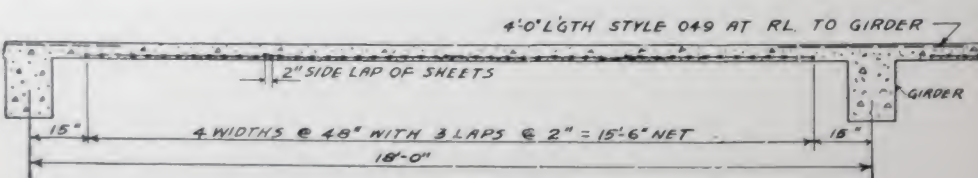


Fig. 14. Section through girder and slabs showing typical mesh design for slabs.

Design No. 1.—Assume the same maximum working stress in the steel for bars and for mesh of 18,000 lbs. per square inch. Using standard designing formulas there will be required 0.21 square inches of steel per foot width of slab which can be supplied by ⅜-inch square deformed bars as detailed in Figs. 11 and 12 or by Triangle Mesh Reinforcement Style 208 as detailed in Figs. 13 and 14.

For each floor span between beams there will be required 26 ⅜-inch square deformed bars each 9 feet long bent as shown and 6 ¼-inch round deformed bars each 19 feet long (allowing a minimum of 12 inches for end lap). For a typical 18′ x 18′ panel which contains 3 spans the total amount of bars required will be:—

26x3x9=702 Lin. ft. ⅜-inch square deformed bars,
702x.478 lbs.=336 lbs. ⅜ inch square deformed bars,
and 6x3x19=342 Lin. ft. ¼ inch round deformed bars,
342x.167 lbs.=57 lbs. ¼-inch round deformed bars,
making a total of 393 lbs. of bars.

For the 18′x18′ panel there will be required 4 strips of Style 208 mesh each 4 feet wide and 18 feet long; also 8 strips of Style 049 each 4 feet wide and 4 feet long, making a total of 288 square feet of Style 208 and 32 square feet of Style 049. Style 208 weighs approximately 89 pounds per 100 square feet and Style 049, approximately 28 pounds per 100 square feet or a total weight of mesh for the 18′x18′ panel of 274 pounds.

Design No. 2.—It is an established fact that wire mesh reinforcement can be safely stressed to a higher limit than bars. The standard working stress for bars is 16,000 lbs. per square inch instead of the 18,000 lbs. used in Design No. 1. With wire mesh this working stress can be safely increased to 20,000 lbs. per square inch. Using these stresses and other conditions the same as in Design No. 1, there will be required for bars a sectional area of 0.238 square inches per foot width which can be supplied by ⅜-inch square bars spaced 7 inches center to center. For the typical 18′x18′ panel there will be required 90 ⅜-inch square deformed bars, each 9 feet long, and 18 ¼-inch round deformed bars, each 19 feet long, or a total of 387 lbs. of ⅜-inch square bars and 57 lbs. of ¼-inch round bars.

Using a maximum working stress for wire mesh of 20,000 lbs. per square inch there will be required a sectional area of 0.180 square inches per foot width which can be supplied by Triangle Mesh Reinforcement Style 180.

The total amount of mesh required for the 18′x18′ panel is 288 square feet of Style 180 and 32 square feet of Style 049 or a total weight of mesh of 234 pounds.

New York Building Code Design—After an exhaustive series of tests the City of New York revised their building code covering reinforced concrete slab designs, as shown in the following article, effective March 14, 1916:

> Article 17, Section 354, paragraph 4-e: "Strength of concrete slabs. In determining the safe carrying capacity of concrete slab floor fillings the gross load in pounds per square foot of floor surface shall not exceed the product of the depth in inches of the reinforcement below the top of the slab, by the cross-sectional area in square inches per foot of width of the tensional steel, divided by the square of the span in feet, all multiplied by the following co-efficients when cinder concrete is used: 14,000 if the reinforcement is not continuous over the supports, 18,000 if the reinforcement consists of rods or other shapes securely hooked over or attached to the supports, and *26,000 if the reinforcement consists of steel fabric continuous over the supports*, and, when stone concrete is used, 16,000, 20,000 and 30,000, respectively." [Note:—This rule applies for spans 8 feet or less.]

Under this code Triangle Mesh Reinforcement style 107 will meet all the requirements as outlined in the example preceding and, therefore, still further economy may be secured.

Comparative Costs:—In view of the fluctuating market and the necessarily differing prices at various points, no attempt will be made here to show the comparative costs, but by the aid of the quantities given above for a typical panel, the actual costs for the material f.o.b. cars at any desired point can be easily figured.

In addition to the cost of the material itself special attention must be given to the comparative costs for placing the steel in the forms ready for the concrete.

For average labor costs and continuous typical floor panels such as are found in factory or office buildings, use $2.00 per ton for placing the fabric and $15.00 to $20.00 per ton for bending, placing and securing the bars.

High labor costs as well as restrictive labor conditions have a greater effect on the fabricating and placing costs for the bars than for the mesh. Under such conditions the saving by the use of fabric in long rolls is particularly noticeable.

Triangle Mesh Reinforced Slabs Supported by Steel Beams

Compare the costs *in place* of Triangle Mesh Fabric with any other form of concrete reinforcement and note the saving secured by its use. The comparative design shown on p. 9 will apply as well for steel as for all concrete framing.

The steel beams and steel columns should be wrapped with Triangle Mesh Reinforcement to prevent the concrete from breaking away from the framing and thereby exposing it to injury in case of fire.

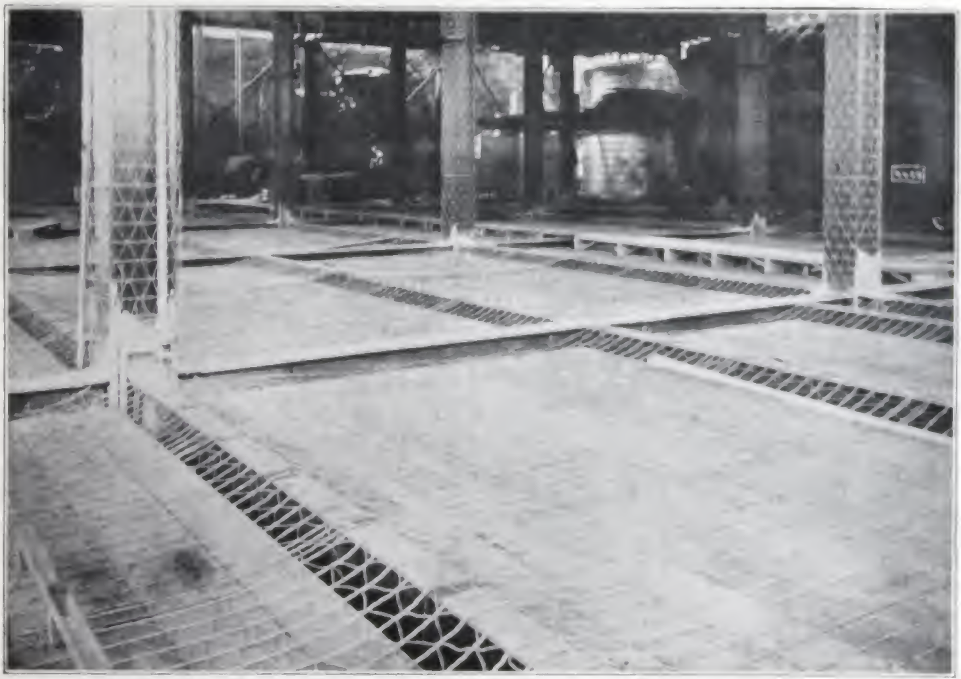


Fig. 15. Ballargeon Building, Seattle, Wash. Steel framing fireproofed and floor slabs reinforced with Triangle Mesh Reinforcement.

Concrete Joist Floors

For long spans and light loads a floor construction consisting of closely spaced concrete ribs and connecting concrete slabs will very often prove to be economical. Fig. 16 shows a typical section of such a floor. Here is a 2 inch or 3 inch slab having a clear span between the supporting ribs of 23 inches that must not only act as part of the compression portion of the beams and resist temperature stresses but in addition act as a support to the loads that may come upon the floor. The most efficient type of reinforcement to take care of these various

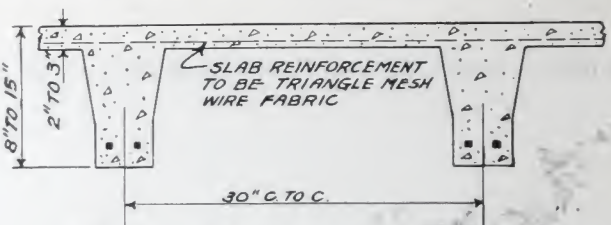


Fig. 16. Typical section of concrete joist floors.

stresses is a fabricated mesh made from cold drawn high elastic limit wire. At first these thin top slabs were built without any reinforcement. Such a construction invites disaster. The next step in the development of this type of floor consisted of adding small wire or rods placed at right angles to the ribs and spaced about 24 inches apart. Such a method possibly takes care of the temperature stresses but does not definitely insure the Tee-beam action assumed in the design and cannot possibly be considered as an efficient reinforcement to carry the live loads coming upon the floor. A thin slab approximately two feet square is left without any reinforcement. A wire mesh fabric with comparatively close spacing of members is the only logical reinforcement to use.

Reinforcement of Top Layer of Concrete Finished Floors

It is often desirable for construction reasons to leave the ¾ or 1 inch top dressing until after the main part of the slab is completely hardened. In this case the slab should be thoroughly cleaned before applying the final course and this course should be reinforced with Triangle Mesh Reinforcement Style 032 to prevent destructive cracks.

Reinforcement for Basement and Other Floors That Rest Upon the Ground

It is very seldom that such a concrete floor has better than filled ground for support and usually must carry heavy loads sometimes spread over a large area, sometimes concentrated on comparatively small space. Unless such a floor is reinforced it is liable to crack and then concrete is criticized unjustly. As conditions vary with each job it is impossible to make any definite suggestions regarding the proper weight of fabric to use but we can say that millions of square feet of Style 049 have been successfully used for this purpose. Where heavy loads and questionable fill-foundations occur it will be economy to use heavier mesh, such for instance as Style 153.

Wire Fabric Reinforcement for All Classes of Cement Gun Work

Gunite (trade name) is concrete applied by the Cement-gun process which produces probably the densest and therefore the most waterproof concrete available by present known methods. The density and waterproofness is undoubtedly due to the pressure continually applied to the green concrete, thereby eliminating as far as possible all voids or air pockets in the mixture. Although Gunite has high tensile and compressive strengths it still requires proper reinforcement to prevent cracks or in other words to produce a structurally strong finished product. Experience has taught the various Cement-gun companies that a close-meshed wire fabric is the most efficient and economical form of reinforcement to use for this purpose.

Gunite reinforced with Triangle Mesh Reinforcement has repaired successfully old crumbling bridge piers, tunnel linings and sea walls; old steel bridges, tanks and trusses; leaky reservoirs and irrigation ditches; even wooden structures that have been damaged by fire have been restored to usefulness by this method. And repair work is by no means the most important class of work produced. All kinds of new construction, especially those requiring waterproof qualities with light resulting weight can be successfully executed.

Splendid work in Gunite has been done in the Construction of Concrete ships and barges and a specially interesting experiment has recently been made with this material in a reinforced concrete freight car. The reinforcing in these cases being bars with triangle wire fabric which distributes the stresses due to shock or unusual loading in an ideal manner.

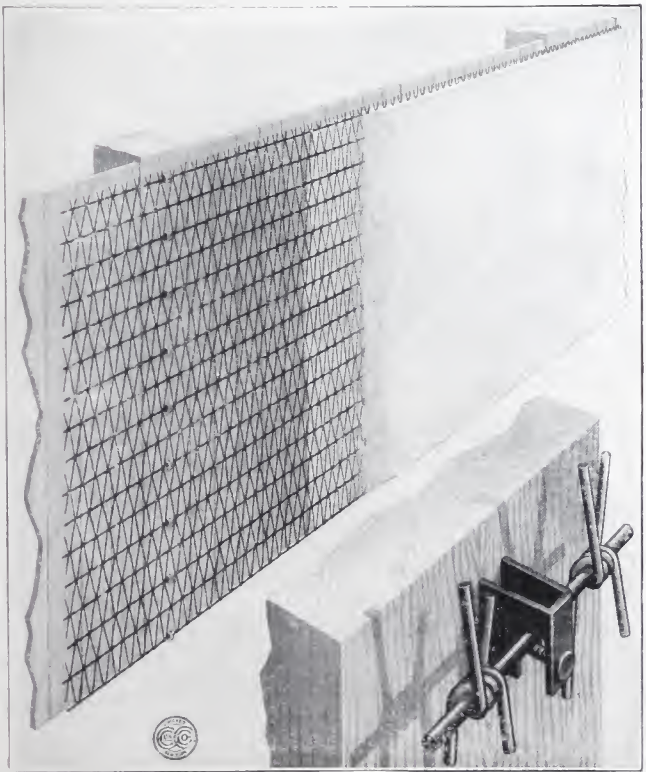
2-inch mesh (2-inch spacing of cross wires known as "A" styles) is made for USE WITH THE CEMENT GUN or similar work. (See Table 4, page 30.)

Fig. 17. Six miles of Gunite Walls on warehouses and piers at Army Supply Base, Norfolk, Va. Placed by Cement Gun Construction Co. of Chicago, using Style 26A Triangle Mesh Reinforcement.

Fig. 18. Illustrating use of Triangle Mesh Reinforcement in restoring railroad bridge piers with Gunite.

Fig. 19. Showing Triangle Mesh Reinforcement in place, preparatory for the lining of a steel coal bunker with Gunite.

Fig 20.



Figs. 20, 21. Illustrating method used by the Cement Gun Construction Co. for holding Wire Mesh in place.

Fig. 22. American Steel & Wire Co.'s fabric is used exclusively in the manufacture of all concrete roof tile produced by the Federal Cement Tile Co. of Chicago.

Fig. 23. Showing one of the types of roof slab manufactured by the Federal Cement Tile Co. of Chicago.

Fig. 24. No other form of reinforcement could have been laid as economically as was the Triangle Mesh Fabric in this floor construction.

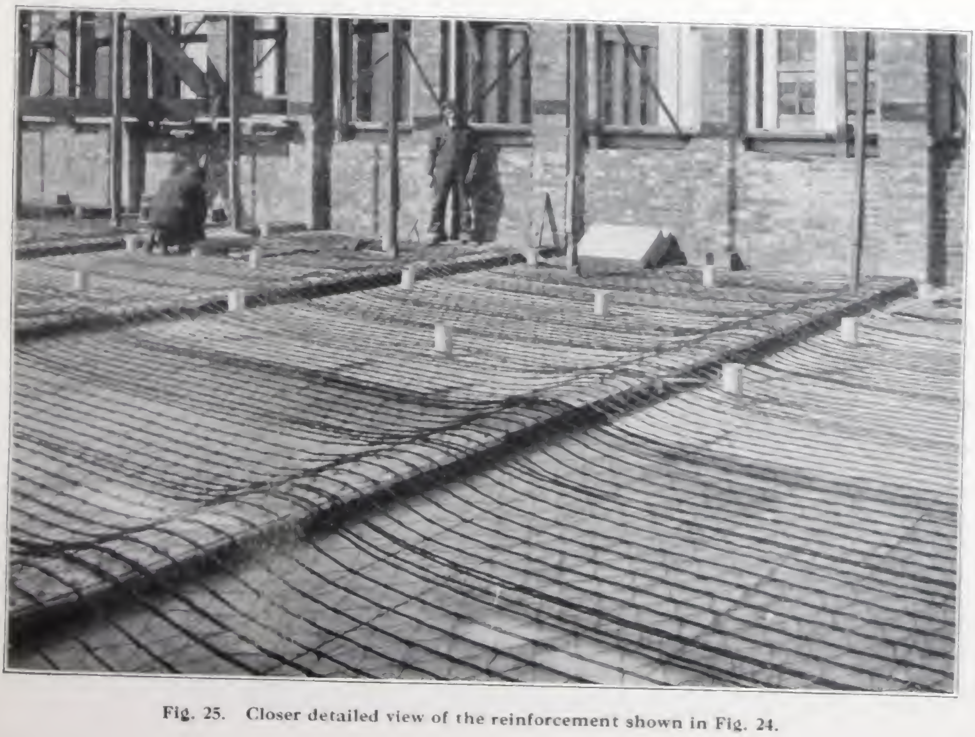


Fig. 25. Closer detailed view of the reinforcement shown in Fig. 24.

Fig. 26. Triangle Mesh Reinforcement as used with concrete supporting beams for the Norwood Sash & Door Co. Building, Norwood, Ohio.

Fig. 27. The low cost of installation is very often the deciding factor. Triangle Mesh Fabric assures minimum cost for placing in position ready for the concrete.

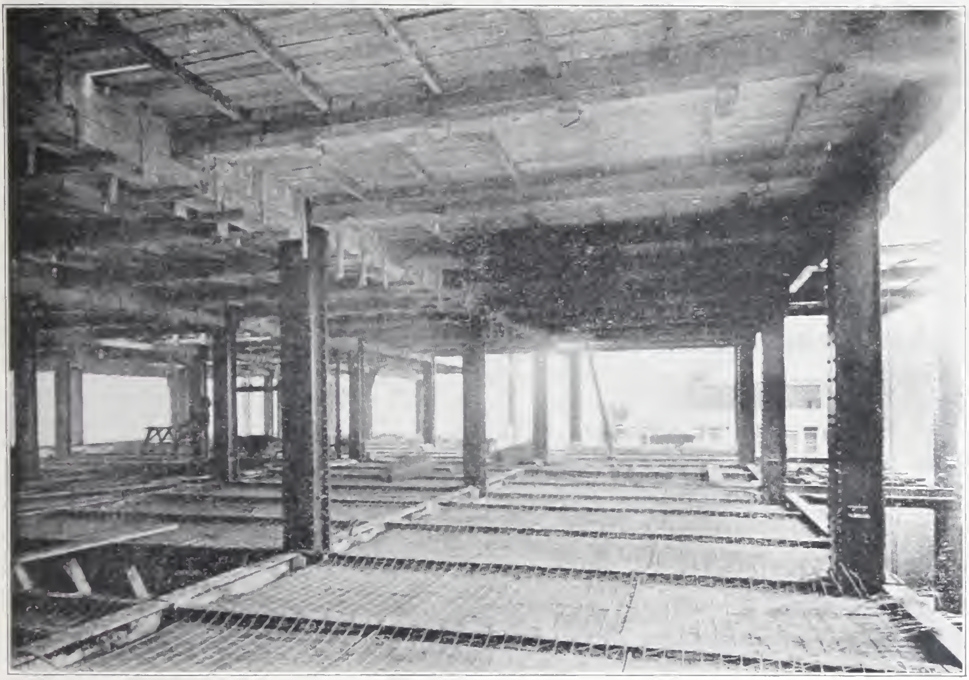


Fig. 28. Stern Brothers Building, 23rd Street, New York City. Architects, Maynicke & Franke; Contractors, Thompson-Starrett Co. 230,500 square feet Triangle Mesh used in the floors of this building.

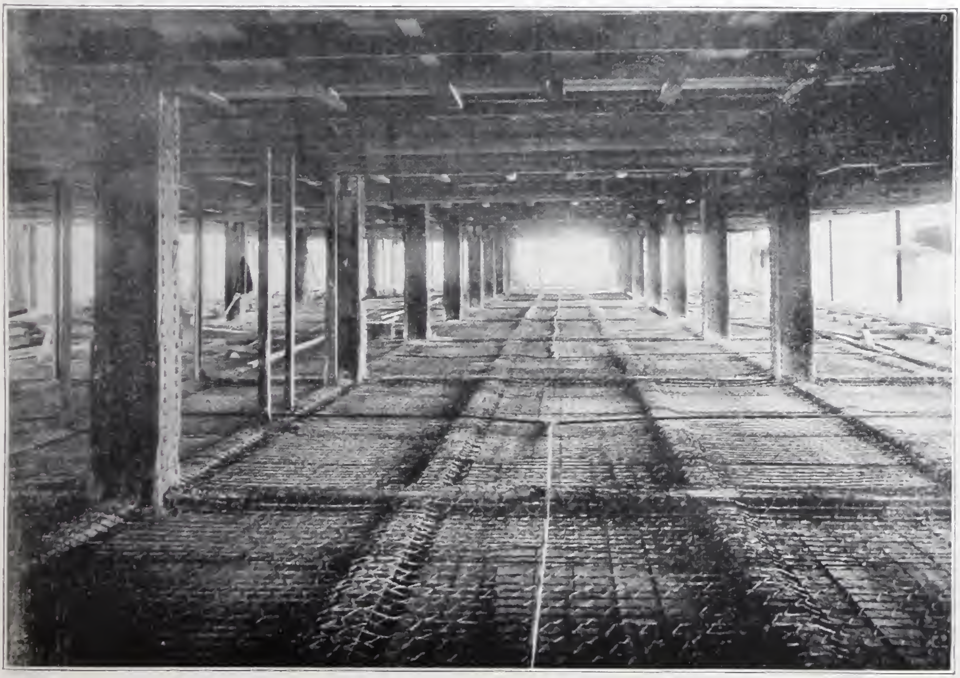


Fig. 29. For the floors, walls, foundations, columns and beams of this storage warehouse over 200,000 square feet of Triangle Mesh Fabric was used.

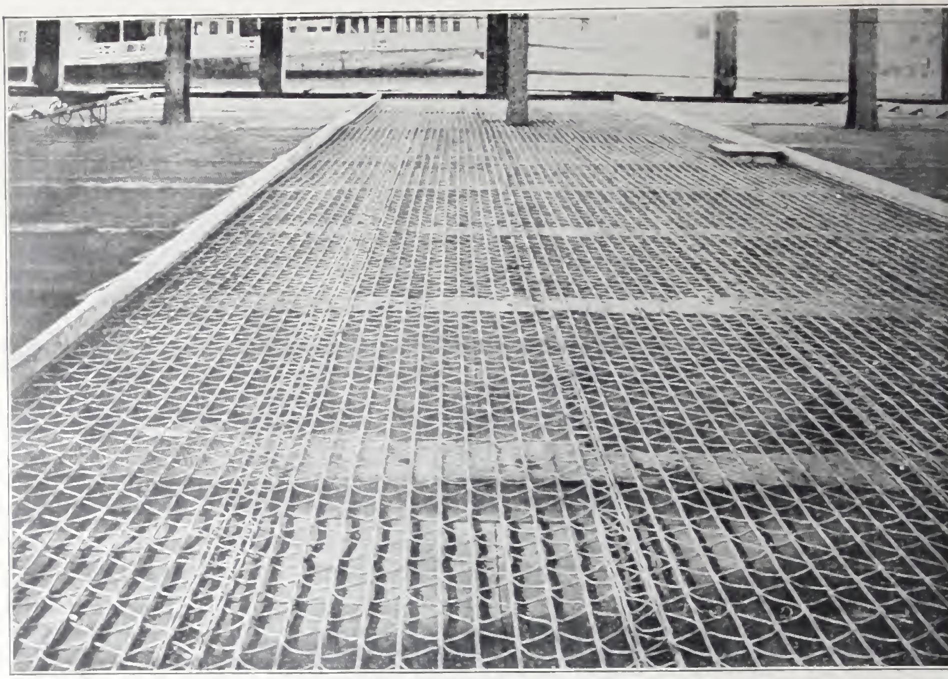


Fig. 30. Absolute minimum cost of installation resulted from the use of Triangle Mesh Reinforcement in Pier 42, North River, New York City. Notice how this heavy 3-strand fabric stays in correct position.

Fig. 31. Alcazar Theater, San Francisco, California. Triangle Mesh Fabric used throughout for reinforcing the floors and fireproofing all steel framing.

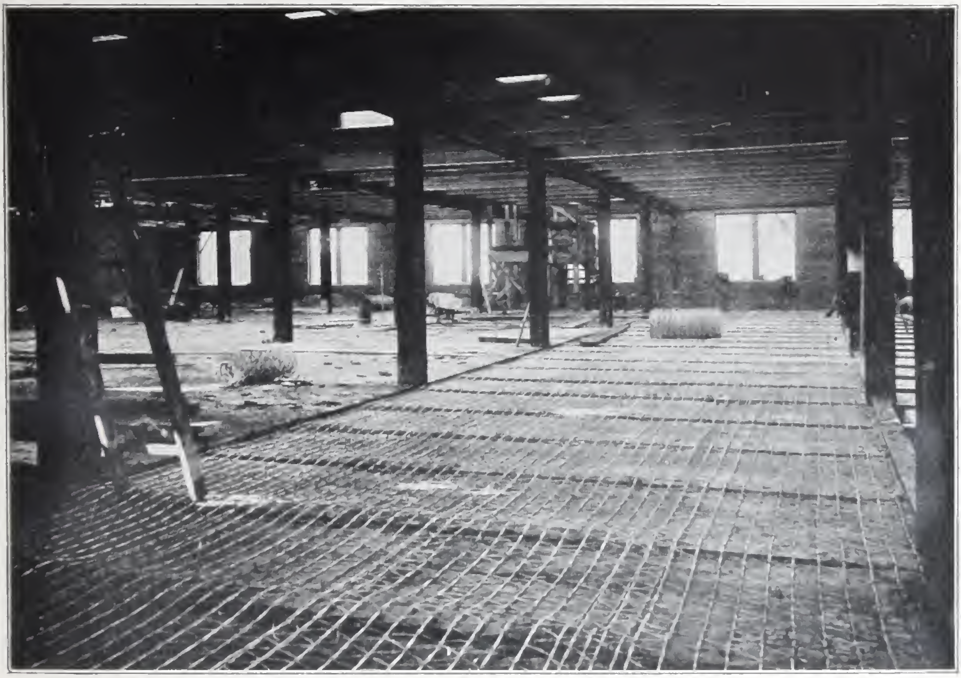


Fig. 32. Granger Building, Buffalo, N. Y.

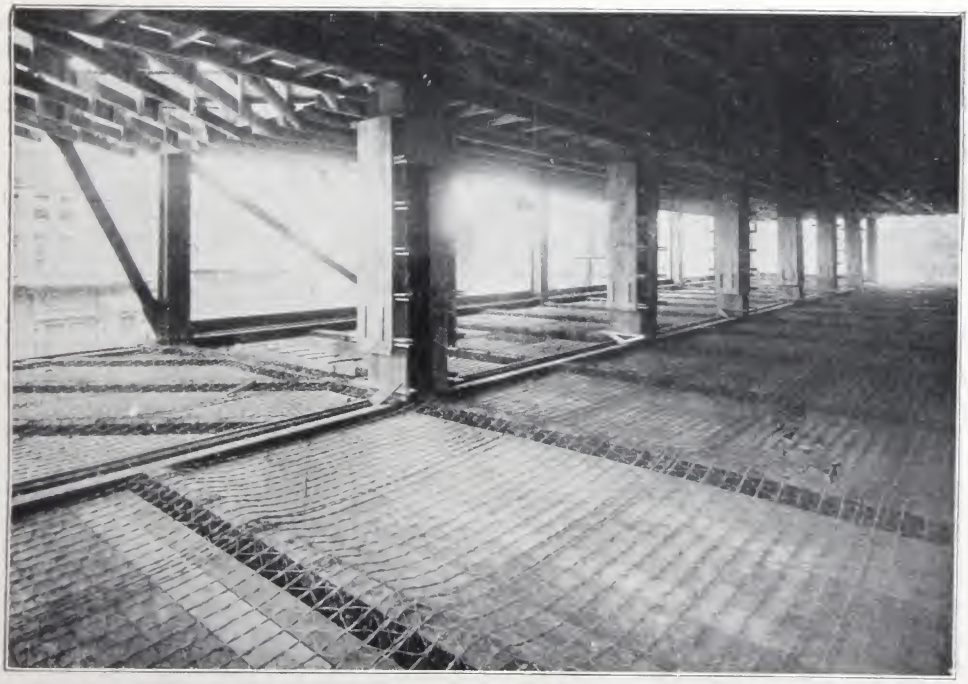


Fig. 33. White Building, Seattle, Wash. Architects, Howells & Stokes, New York & Seattle; Contractors Stone & Webster Engineering Corporation. Triangle Mesh Reinforcement is placed with the least possible amount of labor and stays where it is place.

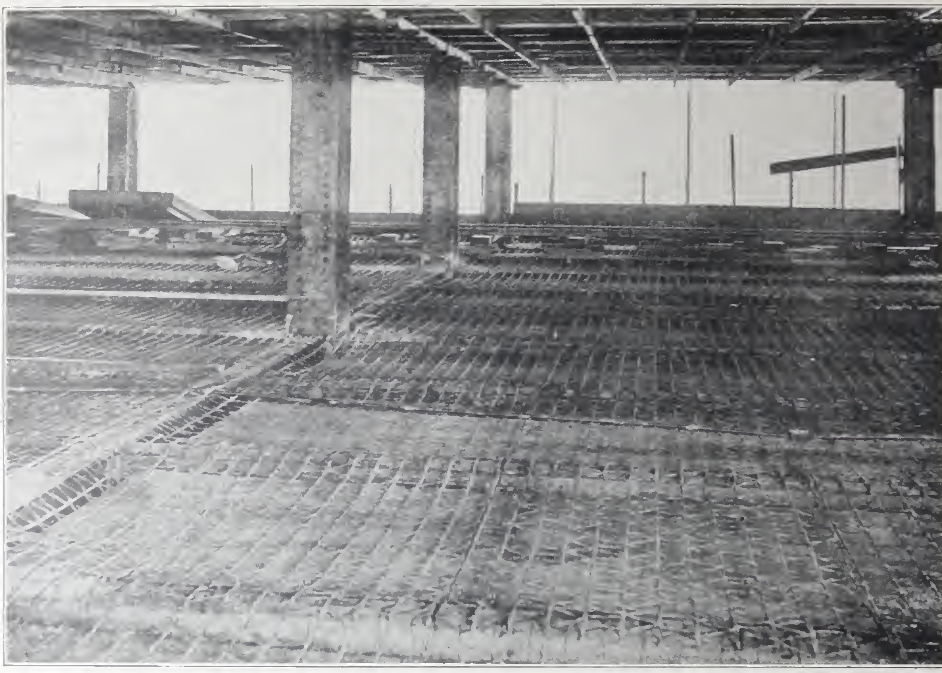


Fig. 34. Seattle Warehouse, Triangle Mesh Fabric used for the Floors, Walls, Foundations and for Fireproofing of the Steel Framing.

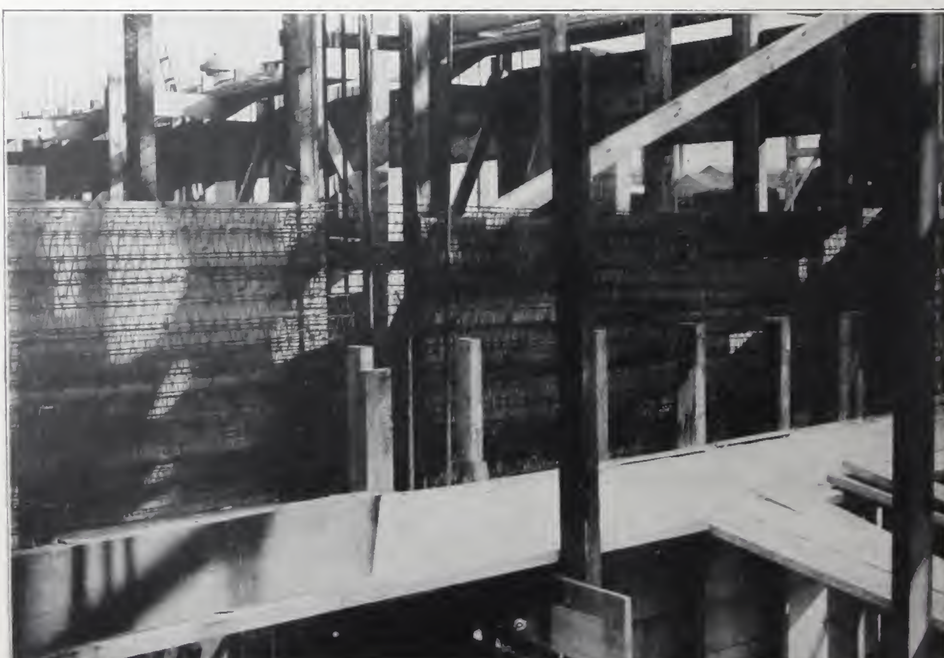


Fig. 35. An Economical and Efficient Wall Reinforcement. Sulphate of Iron Plant, National Tube Co., Lorain, Ohio.

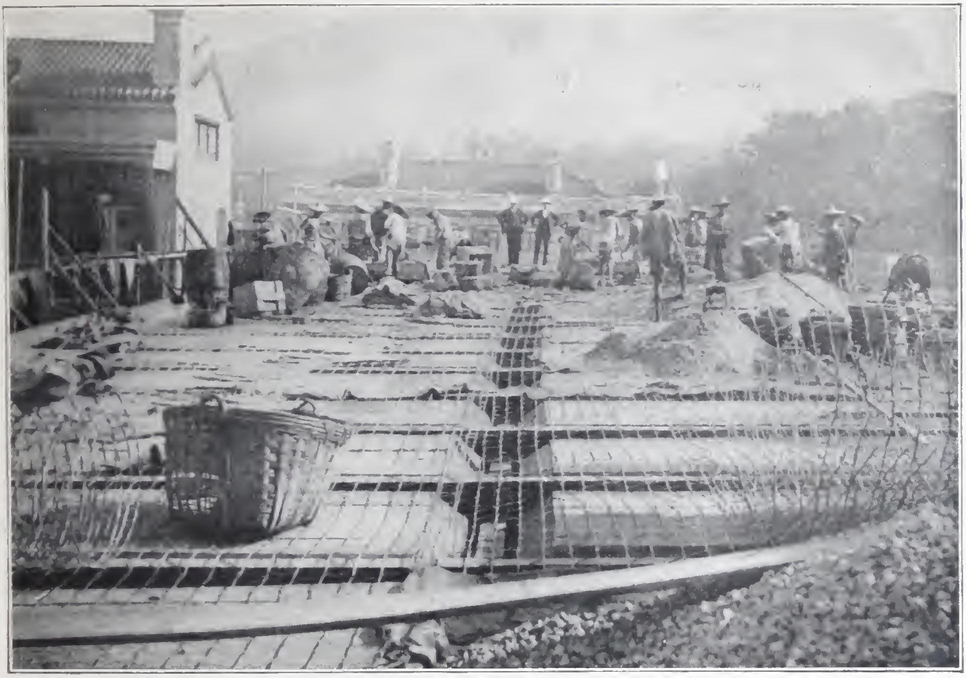


Fig. 36. Roof Construction of the Hong-Kong Hotel, Hong-Kong, China. Whether cheap or expensive labor is used, Triangle Mesh Fabric is the economical Reinforcement.

Fig. 37. Railway Station, Rangoon, Burma. Triangle Mesh Reinforcement is used in all parts of the World.

Industrial Pavements and Driveways

Save tractor power and maintenance cost by constructing reinforced concrete pavements in and around industrial plants. Practical experience as well as theoretical analysis shows the concrete pavement properly reinforced to be the most efficient as well as the most economical type that can be constructed for heavy as well as light industrial traffic.

Fig. 38. Concrete driveways reinforced with Triangle Mesh Fabric have demonstrated the value of this class of construction for the distribution of shop materials at the Santa Fe Shops at Topeka, Kansas.

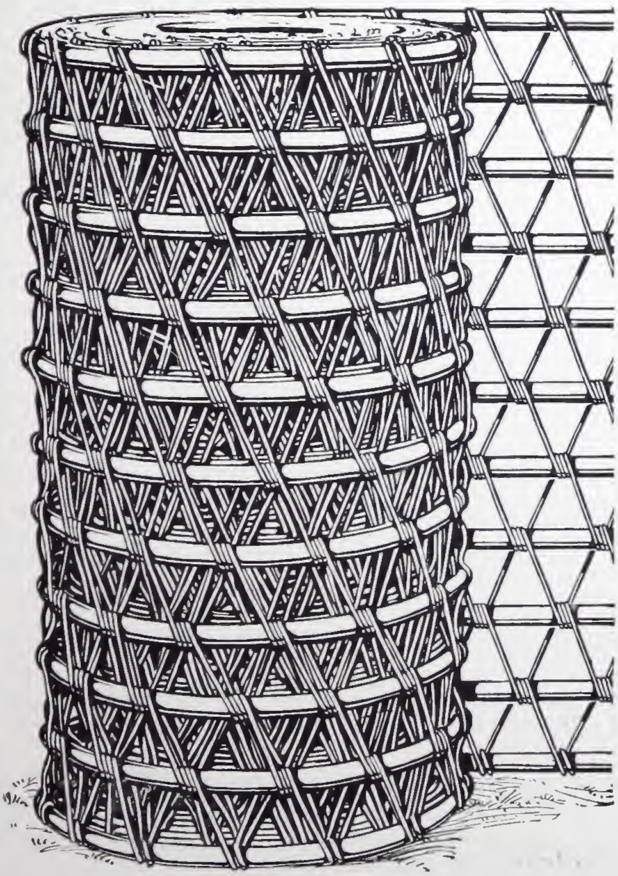
Fig. 39. Illinois Steel Co., Gary, Ind. This entrance driveway was constructed of Concrete properly reinforced with Triangle Mesh Fabric to prevent destructive cracks.

Description of Triangle Mesh Reinforcement

TRIANGLE MESH WOVEN WIRE REINFORCEMENT is made from cold drawn mild steel having a high breaking strength, the longitudinal or tension members are spaced 4 inches, the diagonal cross wires either 2, 4 or 8 inches.

For the light styles of fabric the longitudinals consist of one wire, for the medium styles two wires and for the heavy styles three wires stranded. The size of the wires is varied to obtain the desired cross sectional area of steel per foot of width. The reason for using stranded longitudinals for the heavy fabric is to reduce the stiffness of the finished product without affecting the tensile strength.

TRIANGLE MESH REINFORCEMENT is regularly made in standard rolls but can be furnished straightened and cut to lengths when required providing the tonnage is of a sufficient amount. As a general rule roll material can be more easily handled and installed in the work and should be preferred by the user.



In Rolls

Table No. 1

Longitudinals Spaced 4 Inches

Cross Wires Number 14 Gauge Spaced 4 Inches

Number and Gauge of Wires, Areas per Foot Width and Weights per 100 Square Feet

Style Number	Number and Gauge of Wires each Longitudinal American Steel & Wire Company's Steel Wire Gauge	Sectional Area Longitudinals square inches per foot width	Total Effective Longitudinal Sectional Area square inches per foot width	Approximate Weight lbs. per 100 square feet
032	1—No. 12 gauge	.026	.032	22
040	1— " 11 "	.034	.040	25
049	1— " 10 "	.043	.049	28
058	1— " 9 "	.052	.058	32
068	1— " 8 "	.062	.068	35
080	1— " 7 "	.074	.080	40
093	1— " 6 "	.087	.093	45
107	1— " 5 "	.101	.107	50
126	1— " 4 "	.120	.126	57
146	1— " 3 "	.140	.146	65
153	1— ¼ inch	.147	.153	68
168	1—No. 2 gauge	.162	.168	74
180	2— " 6 "	.174	.180	78
208	2— " 5 "	.202	.208	89
245	2— " 4 "	.239	.245	103
267	3— " 6 "	.261	.267	111
287	3— " 5½ "	.281	.287	119
309	3— " 5 "	.303	.309	128
336	3— " 4½ "	.330	.336	138
365	3— " 4 "	.359	.365	149
395	3— " 3½ "	.389	.395	160

Length of Rolls: 150-foot, 200-foot and 300-foot.

Widths: Approximately 16-inch, 20-inch 24-inch, 28-inch, 32-inch, 36-inch, 40-inch, 44-inch, 48-inch, 52-inch and 56-inch.

Ultimate Tensile Strength 70,000 to 85,000 lbs. per sq. in.

NOTE.—Material may be furnished either plain or galvanized. Unless otherwise specified shipment will be made of material not galvanized.

Heavier Mesh than shown above can be furnished, maximum ½" round solid longitudinal Prices on request.

Table No. 2

Longitudinals Spaced 4 Inches
Cross Wires Number 14 Gauge Spaced 8 Inches

Number and Gauge of Wires, Areas per Foot Width and Weights per 100 Square Feet

Style Number	Number and Gauge of Wires, each Longitudinal American Steel & Wire Company's Steel Wire Gauge	Effective Sectional Area of Cross Reinforcement square ins. per foot width	Effective Longitudinal Sectional Area square inches per foot width	Approximate Weight lbs. per 100 square feet
036P	1—No. 12 gauge	.009	036	17
044P	1— " 11 "	.009	044	20
053P	1— " 10 "	.009	053	24
062P	1— " 9 "	.009	062	27
072P	1— " 8 "	.009	072	31
084P	1— " 7 "	.009	084	35
097P	1— " 6 "	.009	.097	40

Length of Rolls: 150-foot, 200-foot and 300-foot.

Widths: Approximately 16-inch, 20-inch, 24-inch, 28-inch, 32-inch, 36-inch, 40-inch, 44-inch, 48-inch, 52-inch and 56-inch.

Ultimate Tensile Strength 70,000 to 85,000 lbs. per sq. in.

Note.—Materials may be furnished either plain or galvanized. Unless otherwise specified, shipments will be made of material not galvanized.

Table No. 3

Longitudinals Spaced 4 Inches
Cross Wires Number 12½ Gauge Spaced 8 Inches

Number and Gauge of Wires, Areas per Foot Width and Weights per 100 Square Feet

Style Number	Number and Gauge of Wires, each Longitudinal American Steel & Wire Company's Steel Wire Gauge	Effective Sectional Area of Cross Reinforcement square ins. per foot width	Effective Longitudinal Sectional Area square inches per foot width	Approximate Weight lbs. per 100 square feet
041R	1—No. 12 gauge	.014	.041	21
049R	1— " 11 "	.014	.049	24
058R	1— " 10 "	.014	.058	28
067R	1— " 9 "	.014	.067	31
077R	1— " 8 "	.014	.077	35
089R	1— " 7 "	.014	.089	40
102R	1— " 6 "	.014	.102	44

Length of Rolls: 150-foot, 200-foot and 300-foot.

Widths: Approximately 16-inch, 20-inch, 24-inch, 28-inch, 32-inch, 36-inch, 40-inch, 44-inch, 48-inch, 52-inch and 56-inch.

Ultimate Tensile Strength 70,000 to 85,000 lbs. per sq. in.

Note.—Materials may be furnished either plain or galvanized. Unless otherwise specified, shipments will be made of material not galvanized.

Table No. 4

This Material is Used Principally for Cement Gun Work

Longitudinals Spaced 4 Inches
Cross Wires Spaced 2 Inches

Style Number	Number of Wires Each Long	Gauge of Wire Each Long	Gauge of Cross Wires	Approximate Weight per 100 Square Feet
7-A	1	12	14	31
6-A	1	10	14	37
5-A	1	8	14	44
4-A	1	6	14	53
29-A	1	12	12½	42
28 A	1	10	12½	48
27-A	1	8	12½	55
26-A	1	6	12½	64

Length of Rolls: 150-foot, 200-foot and 300-foot.

Width: Approximately 16-inch, 20-inch, 24-inch, 28-inch, 32-inch, 36-inch, 40-inch, 44-inch, 48-inch, 52-inch and 56-inch.

Ultimate Tensile Strength 70,000 to 85,000 lbs. per sq. in.

Note.—Material may be furnished either plain or galvanized. Unless otherwise specified, shipments will be made of material not galvanized.

Table No. 5

Areas in Square Feet per Roll of Triangle Mesh Reinforcement

Width of Roll Inches	Square Feet of Reinforcement in Roll		
	150-foot Roll	200-foot Roll	300-foot Roll
16	200	267	400
20	250	333	500
24	300	400	600
28	350	467	700
32	400	533	800
36	450	600	900
40	500	667	1000
44	550	733	1100
48	600	800	1200
52	650	867	1300
56	700	933	1400

For the Lighter Styles we recommend the use of 200 or 300-foot Rolls. The Heavy Styles are easier to handle in 150-foot Rolls.

Description of American Electrically Welded Fabric

American Electrically Welded Fabric is a square or rectangular mesh made from cold drawn steel wire electrically welded at the intersections of the transverse and longitudinal wires. Various combinations of spacings of wires can be furnished but the standard spacings for the longitudinals are 2, 3, 4 or 6 inches and for the transverse wires 8, 12 or 16 inches. For economical reasons it is advisable to select from the styles listed on the following pages.

The cross or transverse wires extend out one inch beyond the outside or selvage longitudinal wires.

The weights given in the following tables are based on a width of fabric measured center to center of the outside longitudinals. Square footage is also based on a width exclusive of the overhang of the cross wires outside of the longitudinals.

It is regularly made in rolls for fabric having number 3 gauge or smaller longitudinal wires. If the longitudinals are larger than number 3 gauge, flat sheets only will be furnished. Any of the styles can be furnished straightened and cut to lengths at an advance in price over that for rolls.

All widths are based on the distance center to center of the outside or selvage longitudinal wires. The maximum width of fabric depends on the spacing of the longitudinal wires, as follows: 96 inch maximum for 4 or 6 inch spacing, 84 inch maximum for 3 inch spacing and 60 inch maximum for 2 inch spacing.

American Electrically Welded Fabric combines the same high quality of material and service that has given Triangle Mesh Reinforcement its enviable reputation. When imbedded in concrete this fabric yields the maximum of its steel strength.

HOW TO ORDER

Specify the spacings of wires first, then the size or gauge. In each case mention first the longitudinals which are the wires running lengthwise of the roll or sheet.

EXAMPLE:—Assuming No. 6 gauge longitudinal wires spaced 4 inches and No. 10 gauge cross wires spaced 12 inches, the specifications should read: "American Welded Fabric 4 x 12 inch mesh, No. 6 x No. 10 wires."

The lengths and widths of rolls or sheets should be shown. If rolls are ordered and there is no preference as to widths or lengths, specify the total number of square feet and state any standard length and width of rolls will be satisfactory.

Table No. 6

Standard Styles American Electrically Welded Fabric

Spacing of Wires In Inches		American Steel & Wire Company's Steel Wire Gauge No.		Sect. Area Square Inches Per Foot of Fabric		Weight in pounds per 100 sq. ft.
Longit.	Trans.	Longit.	Trans.	Longit.	Trans.	
2	16	1	7	.377	.018	138.9
2	16	2	8	.325	.015	119.4
2	16	3	8	.280	.015	103.6
2	16	4	9	.239	.013	88.5
3	16	2	8	.216	.016	82.6
2	16	5	10	.202	.011	74.6
3	16	3	8	.187	.015	72.0
2	16	6	10	.174	.011	64.7
3	16	4	9	.159	.013	61.4
4	16	3	8	.140	.015	56.1
3	16	5	10	.135	.011	51.8
4	16	4	9	.120	.013	47.9
3	16	6	10	.116	.011	45.1
4	16	5	10	.101	.011	40.4
3	16	7	11	.098	.009	38.1
4	16	6	10	.087	.011	35.2
3	16	8	12	.082	.007	31.7
4	16	7	11	.074	.009	29.7
4	12	8	12	.062	.009	25.5
4	12	9	12	.052	.009	21.8
4	12	10	12	.043	.009	18.6
4	12	12	12	.026	.009	12.6
4	12	5	5	.101	.034	48.4
4	12	6	6	.087	.029	41.6
4	12	7	7	.074	.025	35.4
4	12	8	8	.062	.021	29.6
6	12	0	6	.148	.029	65.3
6	12	2	2	.108	.054	59.4
6	12	3	3	.093	.047	51.0
6	12	4	4	.080	.040	43.8
6	12	5	5	.067	.034	37.0
6	12	6	6	.058	.029	31.8
6	12	7	7	.049	.025	27.0
6	8	12	12	.017	.013	11.1
6	6	4	4	.080	.080	57.8
6	6	5	5	.067	.067	48.8
6	6	6	6	.058	.058	42.0
6	6	7	7	.049	.049	35.7
6	6	8	8	.041	.041	30.0
6	6	9	9	.035	.035	25.0
6	6	10	10	.029	.029	20.7
4	4	4	4	.120	.120	85.3
4	4	6	6	.087	.087	61.9
4	4	8	8	.062	.062	44.1
2	2	10	10	.086	.086	60.3
2	2	12	12	.052	.052	36.8
2	2	13	13	.039	.039	27.7
2	2	14	14	.030	.030	21.2

Widths: Multiples of the spacing of longitudinal wire up to a maximum width which varies with the size and spacing of the longitudinals. Approximate maximums: 56-inch to 72-inch for 2-inch spacing, 84-inch to 96-inch for 3-inch or 4-inch spacing, and 96-inch to 120-inch for 6-inch spacing.

All widths measured center to center of selvage longitudinals.

The traverse wires extend 1 inch beyond the outside longitudinal wires. Square footage or square yardage will be figured exclusive of these projections. Extra charge made for widths narrower than 40 inches.

Length—Rolls:—Styles having longitudinals number 3 gauge or smaller made regularly in standard lengths 150 feet, 200 feet and 300 feet. Flat sheets can be furnished when desired. Styles having longitudinals larger than number 3 gauge made regularly in straighened and cut sheets only.

Weights:—All above weights are based on a width of 60 inches measured from center to center of the outside or selvage longitudinal wires.

Tables for Estimating Weight of American Electrically Welded Wire Fabric

Table No. 7

Longitudinal Wires

Weights per 100 square feet Assuming Net Width of 60 inches Center to Center of Outside Wires

American Steel & Wire Company's Steel Wire Gauge No.	Spacing of Longitudinals, in Inches					
	2	3	4	6	8	12
0000	256.43	173.71	132.35	90.99	69.80	49.63
000	217.31	147.21	112.16	77.11	59.14	42.06
00	181.16	122.72	93.54	64.28	49.31	35.06
0	155.37	105.25	80.19	55.13	42.29	30.07
1	132.43	89.71	68.35	46.99	36.05	25.63
2	113.96	77.20	58.82	40.44	31.02	22.06
3	98.21	66.53	50.69	34.85	26.73	19.01
4	83.95	56.87	43.33	29.79	22.85	16.25
5	70.87	48.01	36.58	25.15	19.29	13.72
6	60.96	41.29	31.46	21.63	16.59	11.80
7	51.81	35.10	26.74	18.38	14.10	10.03
8	43.40	29.40	22.40	15.40	11.81	8.40
9	36.37	24.64	18.77	12.91	9.90	7.04
10	30.14	20.42	15.56	10.69	8.20	5.83
11	24.01	16.27	12.39	8.52	6.54	4.65
12	18.41	12.47	9.50	6.53	5.01	3.56
13	13.84	9.38	7.15	4.91	3.77	2.68
14	10.58	7.17	5.46	3.76	2.88	2.05

Table No. 8

Cross Wires

Weights per 100 square feet Assuming Net Width of 60 inches Center to Center of Outside Wires

American Steel & Wire Company's Steel Wire Gauge No.	Spacing of Cross Wire, in Inches						
	2	3	4	6	8	12	16
0000	256.43	170.95	128.22	85.48	64.11	42.74	32.05
000	217.31	144.87	108.66	72.44	54.33	36.22	27.16
00	181.16	120.78	90.58	60.39	45.29	30.19	22.65
0	155.37	103.58	77.69	51.79	38.84	25.90	19.42
1	132.43	88.29	66.22	44.14	33.11	22.07	16.55
2	113.96	75.97	56.99	37.99	28.49	18.99	14.24
3	98.21	65.47	49.10	32.74	24.55	16.37	12.28
4	83.95	55.97	41.97	27.98	20.99	13.99	10.49
5	70.87	47.24	35.43	23.62	17.72	11.81	8.86
6	60.96	40.64	30.48	20.32	15.24	10.16	7.62
7	51.81	34.54	25.90	17.27	12.95	8.63	6.48
8	43.40	28.93	21.70	14.47	10.85	7.23	5.43
9	36.37	24.25	18.18	12.12	9.09	6.06	4.55
10	30.14	20.09	15.07	10.05	7.53	5.02	3.77
11	24.01	16.01	12.01	8.00	6.00	4.00	3.00
12	18.41	12.27	9.20	6.14	4.60	3.07	2.30
13	13.84	9.23	6.92	4.61	3.46	2.31	1.73
14	10.58	7.06	5.29	3.53	2.65	1.76	1.32

The above weights are based on width of 60 inches measured from center to center of the outside or selvage longitudinal wires.

The weight of the cross or transverse wires includes the 1-inch projection or overhang beyond the outside longitudinal wires.

Table No. 9

Sectional Areas of American Welded Wire Fabric

Area in Square Inches per Foot of Width for Various Spacing of Wires

American Steel & Wire Company's STEEL WIRE GAUGE NO.	WIRE		CENTER TO CENTER SPACING IN INCHES						
	Diam. Inches	Area Sq. Inches	2	3	4	6	8	12	16
000	.3625	.10321	.619	.413	.310	.206	.155	.103	....
00	.3310	.086049	.516	.344	.258	.172	.129	.086	....
0	.3065	.073782	.443	.295	.221	.148	.111	.074	.055
1	.2830	.062902	.377	.252	.189	.126	.094	.063	.047
2	.2625	.054119	.325	.216	.162	.108	.081	.054	.041
3	.2437	.046645	.280	.187	.140	.093	.070	.047	.035
4	.2253	.039867	.239	.159	.120	.080	.060	.040	.030
5	.2070	.033654	.202	.135	.101	.067	.050	.034	.025
6	.1920	.028953	.174	.116	.087	.058	.043	.029	.022
7	.1770	.024606	.148	.098	.074	.049	.037	.025	.018
8	.1620	.020612	.124	.082	.062	.041	.031	.021	.015
9	.1483	.017273	.104	.069	.052	.035	.026	.017	.013
10	.1350	.014314	.086	.057	.043	.029	.021	.014	.011
11	.1205	.011404	.068	.046	.034	.023	.017	.011	.009
12	.1055	.0087417	.052	.035	.026	.017	.013	.009	.007

Table No. 10

Square Feet per Roll of American Welded Reinforcement

Width of Rolls in Inches	SQUARE FEET OF FABRIC PER ROLL		
	150-foot Roll	200-foot Roll	300-foot Roll
24	300	400	600
25	313	417	625
26	325	433	650
27	338	450	675
28	350	467	700
29	363	483	725
30	375	500	750
31	388	517	775
32	400	533	800
33	413	550	825
34	425	567	850
35	438	583	875
36	450	600	900
37	463	617	925
38	475	633	950
39	488	650	975
40	500	667	1000
41	513	683	1025
42	525	700	1050
43	538	717	1075
44	550	733	1100
45	563	750	1125
46	575	767	1150
47	588	783	1175
48	600	800	1200
49	613	817	1225
50	625	833	1250
51	638	850	1275
52	650	867	1300
53	663	883	1325
54	675	900	1350
55	688	917	1375
56	700	933	1400
57	713	950	1425
58	725	967	1450
59	738	983	1475
60	750	1000	1500
61	763	1017	1525
62	775	1033	1550
63	788	1050	1575
64	800	1067	1600
65	813	1083	1625
66	825	1100	1650
67	838	1117	1675
68	850	1133	1700
69	863	1150	1725
70	875	1167	1750
71	888	1183	1775
72	900	1200	1800
73	913	1217	1825
74	925	1233	1850
75	938	1250	1875
76	950	1267	1900
77	963	1283	1925
78	975	1300	1950
79	988	1317	1975
80	1000	1333	2000
81	1013	1350	2025
82	1025	1367	2050
83	1038	1383	2075
84	1050	1400	2100
85	1063	1417	2125
86	1075	1433	2150
87	1088	1450	2175
88	1100	1467	2200
89	1113	1483	2225
90	1125	1500	2250
91	1138	1517	2275
92	1150	1533	2300
93	1163	1550	2325
94	1175	1567	2350
95	1188	1583	2375
96	1200	1600	2400
97	1213	1617	2425
98	1225	1633	2450
99	1238	1650	2475
100	1250	1667	2500
101	1263	1683	2525
102	1275	1700	2550

Explanation of Tables for Reinforced Concrete Slabs

Resisting Moment Tables, Pages 38 to 43

The following tables are based on the "straight line" formula. The ratio of the modulus of elasticity of steel to concrete is taken as fifteen. Values of resisting moments of slabs are given per foot of width for various maximum values for steel and concrete. Below and to the left of the heavy zigzag line, values of resisting moments are given as governed by the maximum allowable fiber stress in steel; the values above and to the right of this line are governed by maximum allowable fiber stress in concrete. The various values for maximum fiber stresses are thus given so that almost any specifications may be complied with.

The tables have been arranged in such a manner that a uniform reinforcement may be used and by increasing or decreasing the thickness of the slabs, spans of greater or lesser length than the average spans of the floor may be taken care of economically with the same reinforcement.

The second column gives the distance in inches from the center of the steel to the bottom of the slab. The third column gives the weight of the concrete slab per square foot of floor area, this weight being based on concrete weighing 144 pounds per cubic foot. It is considered good practice to use B. M. $=\frac{Wl^2}{12}$ when the slab is continuous over both supports; however, care must be taken to have the reinforcement near the top of the slab over supports in order to resist the negative bending moments at these points.

Examples of the use of these tables:

Given: A live load of 75 pounds per square foot; span of slab, 8 feet; floor, cement finish of slab, no plaster below; maximum allowable fiber stress in steel, 18,000 pounds per square inch; maximum allowable fiber stress in concrete, 700 pounds per square inch.

Look in the Table No. 19 giving minimum thickness of slabs for various spans. From this table we find for a load of 100 pounds per square foot and span of 8 feet, a minimum thickness of 3½ inches is shown. It is better, however, to make this slab 4 inches thick.

The total dead load consists of the 4-inch slab, which will weigh

48 pounds per square foot.
Live loads 75 pounds per square foot.
Total 123 pounds per square foot.

For slabs continuous over both supports, figure the bending moment as follows.

Bending moment in foot pounds is equal to the total load per square foot multiplied by the span of the slab (in feet) squared and divided by twelve. Or expressed as a formula:

$$B.\ M. = \frac{wl^2}{12}$$

In which

B. M. = Bending moment in foot pounds.
w = Total load in pounds per square foot.
l = Length of span in feet.

For this particular example

$$w = 123 \text{ (pounds per square foot).}$$
$$l = 8 \text{ (feet span of slab).}$$

Then

$$\text{B. M.} = \frac{123 \text{x} 8^2}{12} = 656 \text{ foot pounds.}$$

Now it is necessary to find in Table No. 15 (corresponding to the given allowable stresses) the reinforcement for a 4-inch slab that will resist a bending moment of 656 foot pounds.

In this table we find a cross sectional area of steel of 0.15 square inch per foot width of slab will be needed to make a 4-inch slab capable of resisting a bending moment of this amount.

This area will be supplied with Triangle Mesh Reinforcement style number 153 as shown in the next to the last column in the table, page 28, or by American Electrically Welded Fabric 3″ x 16″ mesh No. 3 x No. 8 gauge wires as shown on page 32.

Slab Design Tables, See page 37

Table No. 37 shows at a glance the particular style number of Triangle Mesh Reinforcement to use with a given span and live load. The recommendations are based on the standard formula for reinforced concrete slabs using a bending moment of $WL^2 \div 12$, working stress in the steel of 18,000 lbs. per square inch and in the concrete of 700 lbs. per square inch. These assumptions will agree with the majority of building codes. Experience indicates they are decidedly conservative for short spans at least.

If the spans are continuous over one support only, the thickness of slabs as shown in Table No. 12 may be increased by ½ inch or 1-inch as the table indicates or the reinforcement increased in accordance with the substitutions shown in Table No. 11. Using either of these methods is equivalent to assuming a bending moment of $WL^2 \div 10$ which agrees with the standard formulas.

Table No. 11

Specified	Styles	036P	044P	053P	062P	072P	084P	097P	107	126	146
Substitute	Styles	044P	053P	062P	072P	084P	097P	107	126	146	168
Specified	Styles	153	168	180	208	245	267	287	309	336	365
Substitute	Styles	180	208	245	245	267	287	309	336	365	395

NOTE:—Specified styles are those shown in table No. 12 and are based on a bending moment of $WL^2 \div 12$. Substitute Styles are the ones to use in place of the corresponding Specified Styles shown in table No. 12 when a bending moment of $WL^2 \div 10$ is assumed unless the slab thickness is increased as indicated in table No. 12, in which case the Specified Styles apply.

After hundreds of tests of actual slabs made by the Testing Laboratory of Columbia University, the City of New York prepared a code covering slabs having spans of 8 feet or less and decided on the use of the empirical formula as shown on page 11 of this booklet. This formula is equivalent to assuming a working stress in the steel in the standard formula for reinforced concrete design of approximately 32,000 lbs. per square inch. Millions of square feet of reinforced concrete floors have been built in accordance with this New York code.

Table No. 12

Style Number of Triangle Mesh Reinforcement and Thickness of Slab for Given Spans and Loads

Bending Moment = $WL^2 \div 12$. Center of Steel ¾ inch above bottom of slab.

Reinforcement in each case is sufficient for the live load shown plus the weight of the concrete slab. Any dead load of the floor exclusive of the concrete slab should be considered as part of the live load shown here.

If the spans are continuous over one support only the reinforcement may be increased as shown in Table No. 11, or the thickness of slab may be increased by ½ inch for values above and to the left and by 1-inch for values below and to the right of the heavy ziz-zag line in the table below.

Maximum Stresses: Steel = 18,000 Pounds, Concrete = 700 Pounds

Live Load per Square Foot	SPAN OF SLAB CENTER TO CENTER OF SUPPORTS																					
	4'-0"	4'-6"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-6"	8'-0"	8'-6"	9'-0"	9'-6"	10'-0"	10'-6"	11'-0"	11'-6"	12'-0"	12'-6"	13'-0	13'-6"	14'-0"	14'-6"
30#	3" 036P	3" 036P	3" 044P	3" 053P	3" 062P	3" 084P	3" 097P	3" 107	3" 126	3" 146	3" 153	3½" 153	3½" 153	4" 168	4" 180	4" 208	4½" 208	4½" 245	4½" 245	4½" 267	5" 267	5" 287
40#	3" 036P	3" 044P	3" 053P	3" 062P	3" 072P	3" 097P	3" 107	3" 126	3" 146	3" 153	3½" 153	3½" 168	3½" 180	4" 180	4" 208	4" 245	4½" 245	4½" 267	4½" 287	5" 287	5" 309	5½" 309
50#	4" 036P	4" 036P	4" 044P	4" 053P	4" 072P	4" 084P	4" 097P	4" 107	4" 126	4" 146	4" 153	4" 168	4" 180	4" 208	4" 245	4½" 245	4½" 267	5" 267	5" 287	5" 309	5½" 309	5½" 336
60#	4" 036P	4" 044P	4" 053P	4" 062P	4" 072P	4" 097P	4" 107	4" 126	4" 146	4" 153	4" 168	4" 180	4" 208	4" 245	4½" 245	4½" 267	5" 267	5" 287	5" 309			
80#	4" 036P	4" 053P	4" 062P	4" 072P	4" 097P	4" 107	4" 126	4" 146	4" 153	4" 180	4" 208	4½" 208	4½" 245	4½" 245	5" 267	5" 287	5" 309	5½" 309				
100#	4" 044P	4" 053P	4" 072P	4" 084P	4" 107	4" 126	4" 146	4" 168	4" 180	4" 208	4" 245	4½" 245	4½ 267	5" 267	5" 287	5½" 287	5½" 336	6" 336				
125#	4" 053P	4" 062P	4" 084P	4" 097P	4" 126	4" 146	4" 168	4" 180	4" 208	4½" 208	4½" 245	5" 245	5" 287	5" 309	5½" 309	6" 309	6½" 336					
150#	4" 062P	4" 072P	4" 097P	4" 126	4" 146	4" 168	4" 180	4" 208	4½" 208	4½" 245	5" 267	5" 287	5½" 287	5½" 336	6" 336							
175#	4" 072P	4" 084P	4" 107	4" 126	4" 153	4" 180	4" 208	4½" 208	4½" 245	5" 267	5" 287	5½" 287	5½" 336	6" 336								
200#	4" 072P	4" 097P	4" 126	4" 146	4" 168	4" 208	4½" 208	4½" 245	5" 245	5" 287	5½" 287	5½" 336	6" 336									
250#	4" 097P	4" 126	4" 146	4" 168	4" 208	4½" 208	4½" 267	5" 267	5" 309	5½" 309	6" 309	6½" 336										
300#	4" 107	4" 146	4" 168	4" 208	4½" 208	4½" 267	5" 267	5" 309	5½" 309	6" 336												

For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30.
For sectional areas, weights, etc., of American Electrically Welded Fabric, see pages 32-33-34.

American Electrically Welded Fabric may be substituted for the Triangle Mesh specified provided equal sectional areas per foot are used.

Table No. 13

Area of Steel Required per Foot of Width for a Maximum Resisting Moment of Slab of Given Thickness

Corresponding safe bending moment due to applied load and weight of floor:

The maximum allowable fiber stress in the steel governs the values of resisting moments given below and to the left of the **heavy zigzag** line; the maximum allowable fiber stress in the concrete governs the values above and to the right of this line.

Maximum Stresses: Steel = 18,000 Pounds, Concrete = 600 Pounds **Concrete 1:2½:5**

Total Thickness of Slab Inches	Center of Steel to Bottom of Slab	Weight of Slab per Square Foot Pounds	Moments of Resistance in Foot Pounds per Foot of Width																						
			Cross Sectional Area in Square Inches of Steel Reinforcement per Foot of Width																						
			.04	.06	.08	.10	.12	.14	.16	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00
2½	¾	30	97	146	189	237	275	290	302	315	325	348													
3	¾	36	128	185	250	305	368	422	459	480	496	534	564												
3½	¾	42	154	228	301	373	444	515	585	666	694	747	792	830											
4	¾	48	180	267	370	454	538	621	703	784	865	986	1048	1103	1150										
4½	¾	54	216	309	424	515	627	716	826	914	1001	1238	1333	1402	1463	1517									
5	1	60		352	456	560	663	764	865	965	1090	1336	1477	1561	1627	1693	1747								
5½	1	66		379	512	644	741	871	999	1095	1222	1504	1805	1900	1984	2060	2136	2198							
6	1	72			550	714	835	956	1115	1234	1352	1702	2010	2256	2370	2461	2544	2628	2698						
6½	1	78			616	765	913	1059	1206	1349	1493	1872	2200	2571	2775	2882	2990	3078	3169	3253					
7	1	84				851	1027	1144	1318	1491	1663	2059	2452	2840	3209	3324	3463	3574	3663	3759	3848	3931			
7½	1¼	90				859	1050	1240	1366	1554	1741	2110	2537	2959	3318	3566	3703	3810	3927	4034	4120	4215			
8	1¼	96					1152	1300	1522	1668	1887	2320	2749	3173	3664	4061	4207	4341	4465	4581	4689	4806	4900	5075	5232
8½	1¼	102					1243	1414	1586	1840	2009	2511	3006	3416	3906	4386	4715	4880	5032	5174	5284	5409	5526	5724	5917
9	1½	108						1514	1697	1879	2059	2598	3041	3569	4004	4524	5014	5164	5333	5462	5609	5723	5852	6069	6266
9½	1½	114						1618	1827	2034	2240	2753	3259	3761	4358	4852	5342	5741	5910	6099	6243	6381	6511	6773	6989
10	1½	120							1944	2180	2413	2993	3451	4020	4584	5144	5700	6252	6557	6745	6917	7048	7234	7490	7747

NOTE—For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30. For examples showing use of tables, see pages 35-36.
For sectional areas, weights, etc., of American Electrically Welded Fabric, see pages 32-33-34.

Table No. 14

Area of Steel Required per Foot of Width for a Maximum Resisting Moment of Slab of Given Thickness

Corresponding safe bending moment due to applied load and weight of floor.

The maximum allowable fiber stress in the steel governs the values of resisting moments given below and to the left of the heavy zigzag line; the maximum allowable fiber stress in the concrete governs the values above and to the right of this line.

Maximum Stresses: Steel=18,000 Pounds. Concrete=650 Pounds — **Concrete** { 1:2:4 / 1:2½:5 carefully graded }

Total Thickness of Slab Inches	Center of Steel to Bottom of Slab	Weight of Slab per Square Foot Pounds	Moments of Resistance in Foot Pounds per Foot of Width — Cross Sectional Area in Square Inches of Steel Reinforcement per Foot of Width: .04	.06	.08	.10	.12	.14	.16	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00
2½	¾	30	97	146	189	237	279	314	328	341	353	377													
3	¾	36	128	185	250	305	368	422	476	520	537	578	611												
3½	¾	42	154	228	301	373	444	515	585	666	734	810	858	900											
4	¾	48	180	267	370	454	538	621	708	784	865	1068	1136	1194	1246										
4½	¾	54	216	309	424	515	627	716	826	914	1001	1238	1444	1519	1585	1644									
5	1	60		352	456	560	663	764	865	965	1090	1336	1578	1691	1764	1835	1893								
5½	1	66		379	512	644	741	871	999	1095	1222	1504	1814	2058	2150	2232	2314	2381							
6	1	72			550	714	835	956	1115	1234	1352	1702	2010	2315	2568	2666	2756	2848	2922						
6½	1	78			616	765	913	1059	1206	1349	1493	1872	2200	2571	2938	3123	3240	3334	3431	3525					
7	1	84				851	1027	1144	1318	1491	1663	2059	2452	2840	3225	3551	3752	3872	3968	4072	4169	4259			
7½	1¼	90				859	1050	1240	1366	1554	1741	2110	2537	2959	3318	3735	4012	4128	4255	4371	4464	4566			
8	1¼	96					1152	1300	1522	1668	1887	2320	2749	3173	3664	4081	4494	4703	4837	4963	5080	5207	5309	5498	5668
8½	1¼	102					1243	1414	1586	1840	2009	2511	3006	3416	3906	4386	4789	5264	5452	5605	5725	5860	5987	6201	6410
9	1½	108						1514	1697	1879	2059	2598	3041	3569	4004	4524	5038	5464	5777	5918	6077	6200	6340	6576	6788
9½	1½	114						1618	1827	2034	2240	2753	3259	3761	4358	4852	5342	5830	6313	6607	6764	6914	7055	7338	7571
10	1½	120							1944	2180	2413	2993	3451	4020	4584	5144	5700	6252	6810	7307	7494	7636	7836	8114	8393

NOTE—For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30. For examples showing use of tables, see page 35-36.
For sectional areas, weights, etc., of American Electrically Welded Fabric, see pages 32-33-34.

Table No. 15

Area of Steel Required per Foot of Width for a Maximum Resisting Moment of Slab of Given Thickness

Corresponding safe bending moment due to applied load and weight of floor:

The maximum allowable fiber stress in the steel governs the values of resisting moments given below and to the left of the heavy zigzag line; the maximum allowable fiber stress in the concrete governs the values above and to the right of this line.

Maximum Stresses: Steel = 18,000 Pounds, Concrete = 700 Pounds **Concrete 1:2:4**

Total Thickness of Slab Inches	Center of Steel to Bottom of Slab	Weight of Slab per Square Foot Pounds	Moments of Resistance in Foot Pounds per Foot of Width — Cross Sectional Area in Square Inches of Steel Reinforcement per Foot of Width: .04	.06	.08	.10	.12	.14	.16	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00
2½	¾	30	97	146	189	237	279	325	353	367	379	406													
3	¾	36	128	185	250	305	368	422	476	537	579	623	658												
3½	¾	42	154	228	301	373	444	515	585	666	734	872	924	969											
4	¾	48	180	267	370	454	538	621	703	784	865	1074	1223	1286	1342										
4½	¾	54	216	309	424	515	627	716	826	914	1001	1238	1493	1636	1707	1770									
5	1	60		352	456	560	663	764	865	965	1090	1336	1578	1821	1899	1976	2038								
5½	1	66		379	512	644	741	871	999	1095	1222	1504	1814	2089	2316	2404	2492	2565							
6	1	72			550	714	835	956	1115	1234	1352	1702	2010	2315	2654	2871	2968	3066	3147						
6½	1	78			616	765	913	1059	1206	1349	1493	1872	2200	2571	2938	3257	3489	3591	3698	3796					
7	1	84				851	1027	1144	1318	1491	1663	2059	2452	2840	3225	3551	3984	4170	4274	4386	4490	4586			
7½	1¼	90				859	1050	1240	1366	1554	1741	2110	2537	2959	3318	3735	4143	4442	4579	4704	4802	4913			
8	1¼	96					1152	1300	1522	1668	1887	2320	2749	3173	3664	4081	4494	4905	5210	5345	5470	5607	5717	5920	6104
8½	1¼	102					1243	1414	1586	1840	2009	2511	3006	3416	3906	4386	4789	5264	5738	6035	6166	6311	6447	6678	6903
9	1½	108						1514	1697	1879	2059	2598	3041	3569	4004	4524	5038	5464	5972	6373	6544	6677	6828	7081	7310
9½	1½	114						1618	1827	2034	2240	2753	3259	3761	4358	4852	5342	5830	6313	6890	7284	7446	7597	7902	8154
10	1½	120							1944	2180	2413	2993	3451	4020	4584	5144	5700	6252	6810	7345	7889	8224	8440	8739	9038

NOTE.—For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30. For examples showing use of tables, see page 35-36.
For sectional areas, weights, etc., of American Electrically Welded Fabric, see pages 32-33-34.

Table No. 16

Area of Steel Required per Foot of Width for a Maximum Resisting Moment of Slab of Given Thickness

Corresponding safe bending moment due to applied load and weight of floor:

The maximum allowable fiber stress in the steel governs the values of resisting moments given below and to the left of the heavy zigzag line; the maximum allowable fiber stress in the concrete governs the values above and to the right of this line.

Maximum Stresses: Steel = 20,000 Pounds, Concrete = 600 Pounds **Concrete 1:2½:5**

Total Thickness of Slab Inches	Center of Steel to Bottom of Slab	Weight of Slab per Square Foot Pounds	Moments of Resistance in Foot Pounds per Foot of Width — Cross Sectional Area in Square Inches of Steel Reinforcement per Foot of Width																						
			.04	.06	.08	.10	.12	.14	.16	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00
2½	¾	30	108	162	210	258	275	290	302	315	325	348													
3	¾	36	142	206	277	339	409	439	459	480	496	534	564												
3½	¾	42	171	253	334	415	494	572	638	670	694	747	792	830											
4	¾	48	200	297	411	505	597	690	781	872	911	986	1048	1103	1150										
4½	¾	54	240	344	471	572	697	795	918	1015	1112	1245	1333	1402	1463	1517									
5	1	60		377	508	622	736	849	961	[illegible]	1211	1389	1477	1561	1627	1693	1747								
5½	1	66		421	569	715	824	968	1110	1216	1358	1671	1805	1900	1984	2060	2136	2198							
6	1	72			611	793	928	1063	1239	1371	1502	1892	2141	2256	2370	2461	2544	2628	2698						
6½	1	78			684	850	1014	1177	1338	1499	1659	2080	2445	2645	2775	2882	2990	3078	3169	3253					
7	1	84				946	1142	1271	1464	1657	1848	2289	2724	3061	3209	3324	3463	3574	3663	3759	3848	3931			
7½	1¼	90				955	1168	1379	1519	1728	1935	2346	2821	3272	3415	3566	3703	3810	3927	4034	4120	4215			
8	1¼	96					1280	1445	1690	1853	2097	2577	3054	3525	3902	4061	4207	4341	4465	4581	4689	4806	4900	5075	5232
8½	1¼	102					1383	1571	1762	2045	2232	2789	3341	3796	4338	4564	4715	4880	5032	5174	5284	5409	5526	5724	5917
9	1½	108						1682	1886	2087	2288	2887	3378	3966	4449	4817	5014	5164	5333	5462	5609	5723	5852	6069	6266
9½	1½	114						1793	2030	2260	2490	3058	3620	4179	4842	5362	5558	5741	5910	6099	6243	6381	6511	6773	6989
10	1½	120							2160	2422	2680	3325	3834	4467	5094	5715	6143	6359	6557	6745	6917	7048	7234	7490	7747

NOTE—For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30. For examples showing use of tables, see page 35-36.
For sectional areas, weights, etc., of American Electrically Welded Fabric, see pages 32-33-34.

Table No. 17

Area of Steel Required per Foot of Width for a Maximum Resisting Moment of Slab of Given Thickness

Corresponding safe bending moment due to applied load and weight of floor.

The maximum allowable fiber stress in the steel governs the values of resisting moments given below and to the left of the heavy zigzag lines; the maximum allowable fiber stress in the concrete governs the values above and to the right of this line.

Maximum Stresses: Steel=20,000 Pounds, Concrete=650 Pounds Concrete { 1:2:4 / 1:2½:5 carefully graded

Total Thickness of Slab Inches	Center of Steel to Bottom of Slab	Weight of Slab per Square Foot Pounds	Moments of Resistance in Foot Pounds per Foot of Width — Cross Sectional Area in Square Inches of Steel Reinforcement per Foot of Width																			
			.04	.06	.08	.10	.12	.14	.16	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1.00
2½	¾	30	108	162	210	263	297	314	328	341	353	377													
3	¾	36	142	206	277	339	409	469	498	520	537	578	611												
3½	¾	42	171	253	334	415	494	572	650	726	752	810	858	900											
4	¾	48	200	297	411	505	597	690	781	872	961	1068	1136	1194	1246										
4½	¾	54	240	344	471	572	697	795	918	1015	1112	1349	1444	1519	1585	1644									
5	1	60		377	508	622	736	849	961	1073	1211	1484	1601	1691	1764	1835	1893								
5½	1	66		421	569	715	824	968	1110	1216	1358	1671	1956	2058	2150	2232	2314	2381							
6	1	72			611	793	928	1063	1239	1371	1502	1892	2234	2444	2568	2666	2756	2848	2922						
6½	1	78			684	850	1014	1177	1338	1499	1659	2080	2445	2857	3008	3123	3240	3334	3431	3525					
7	1	84				946	1142	1271	1464	1657	1848	2289	2724	3156	3476	3601	3752	3872	3968	4072	4169	4259			
7½	1¼	90				955	1168	1379	1519	1728	1935	2346	2821	3290	3688	3863	4012	4128	4255	4371	4464	4566			
8	1¼	96					1280	1445	1690	1853	2097	2577	3054	3525	4071	4400	4558	4703	4837	4963	5080	5207	5309	5498	5668
8½	1¼	102					1383	1571	1762	2045	2232	2789	3341	3796	4338	4874	5108	5286	5452	5605	5725	5860	5987	6201	6410
9	1½	108						1682	1886	2087	2288	2887	3378	3966	4449	5026	5432	5594	5777	5918	6077	6200	6340	6576	6788
9½	1½	114						1798	2030	2260	2490	3058	3620	4179	4842	5391	5936	6220	6403	6607	6764	6914	7055	7338	7571
10	1½	120							2160	2422	2680	3325	3834	4467	5094	5715	6333	6890	7104	7307	7494	7636	7836	8114	8893

NOTE—For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30. For examples showing use of tables, see page 35-36. For sectional areas, weights, etc., of American Electrically Welded Fabric see pages 32-33-34.

Table No. 18

Area of Steel Required per Foot of Width for a Maximum Resisting Moment of Slab of Given Thickness

Corresponding safe bending moment due to applied load and weight of floor:

The maximum allowable fiber stress in the steel governs the values of resisting moments given below and to the left of the heavy zigzag line; the maximum allowable fiber stress in the concrete governs the values above and to the right of this line.

Maximum Stresses: Steel = 20,000 Pounds, Concrete = 700 Pounds **Concrete, 1:2:4**

Total Thickness of Slab Inches	Center of Steel to Bottom of Slab	Weight of Slab per Square Foot Pounds	Moments of Resistance in Foot Pounds per Foot of Width																						
			Cross Sectional Area in Square Inches of Steel Reinforcement per Foot of Width																						
			.04	.06	.08	.10	.12	.14	.16	.18	.20	.25	.30	.35	.40	.45	.50	.55	.60	.65	.70	.75	.80	.90	1 00
2½	¾	30	108	162	210	263	310	338	353	367	379	406													
3	¾	36	142	206	277	339	409	469	529	560	579	628	658												
3½	¾	42	171	253	334	415	494	572	650	740	810	872	924	969											
4	¾	48	200	297	411	505	597	690	781	872	961	1150	1223	1286	1345										
4½	¾	54	240	344	471	572	697	795	918	1015	1112	1376	1555	1636	1707	1770									
5	1	60		377	508	622	736	849	961	1073	1211	1484	1724	1821	1899	1976	2038								
5½	1	66		421	569	715	824	968	1110	1216	1358	1671	2015	2217	2316	2404	2492	2565							
6	1	72			611	793	928	1063	1239	1371	1502	1892	2234	2572	2765	2871	2968	3066	3147						
6½	1	78			684	850	1014	1177	1338	1499	1659	2080	2445	2857	3240	3363	3489	3591	3698	3796					
7	1	84				946	1142	1271	1464	1657	1848	2289	2724	3156	3583	3878	4040	4170	4274	4386	4490	4586			
7½	1¼	90				955	1168	1379	1519	1728	1935	2346	2821	3290	3688	4150	4320	4442	4579	4704	4802	4913			
8	1¼	96					1280	1445	1690	1853	2097	2577	3054	3525	4071	4534	4908	5065	5210	5345	5470	5607	5717	5920	6104
8½	1¼	102					1383	1571	1762	2045	2232	2789	3341	3796	4338	4874	5320	5693	5871	6035	6166	6311	6447	6678	6903
9	1½	108						1682	1886	2087	2288	2887	3378	3966	4449	5026	5598	6024	6222	6373	6544	6677	6828	7081	7310
9½	1½	114						1798	2030	2260	2490	3058	3620	4179	4842	5391	5936	6477	6895	7115	7284	7446	7597	7902	8154
10	1½	120							2160	2422	2680	3325	3834	4467	5094	5715	6333	6946	7555	7869	8071	8224	8440	8739	9038

NOTE—For sectional areas, weights, etc., of Triangle Mesh Wire Reinforcement, see pages 28-29-30. For examples showing use of tables see page 35-36.
For sectional areas, weights, etc., of American Electrically Welded Fabric see pages 32-33-34.

Table No. 19

Recommended MINIMUM DEPTH of Slabs in Inches

Span in Feet. Mixture 1:2:4

Live Load in Pounds per Square Foot	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
50	2.5	2.5	3.0	3.0	3.5	3.5	4.0	4.0	4.5	5.0	5.0	5.5	5.5	6.0	6.5	7.0	7.5
100	3.0	3.0	3.0	3.5	3.5	4.0	4.5	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0
150	3.0	3.0	3.5	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.0
200	3.5	3.5	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.0	9.5	10.5	11.0
250	3.5	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5	8.0	8.5	9.5	10.0	10.5	11.0	12.0
300	4.0	4.0	4.0	4.5	5.0	5.5	6.5	7.0	7.5	8.0	8.5	9.5	10.0	10.5	11.5	12.0	
350	4.0	4.0	4.5	5.0	5.5	6.0	6.5	7.5	8.0	8.5	9.0	10.0	10.5	11.5	12.0		
400	4.5	4.5	4.5	5.0	5.5	6.5	7.0	7.5	8.5	9.0	9.5	10.5	11.0	12.0			
450	4.5	4.5	4.5	5.5	6.0	6.5	7.5	8.0	8.5	9.5	10.0	11.0	11.5				
500	4.5	4.5	5.0	5.5	6.0	7.0	7.5	8.5	9.0	10.0	10.5	11.5	12.0				

The depths given are the recommended minimum total thickness of the slab, assuming the center of the reinforcement to be ¾ inch above bottom. More covering than this may be used by increasing the depth, the extra weight of this concrete being added to the live load.

It is always allowable and usually advisable to use depths greater than those here specified, thereby decreasing the amount of reinforcement and increasing the amount of concrete. It is also possible to use somewhat less depths, but not economical. For depths greater than 8 inches, it is more economical to use reinforced concrete beams with thinner slabs between. These depths may also be used for a carefully graded mixture of 1:2½:5 concrete.

Table No. 20

Volume of Concrete Based on a Barrel of 3.8 Cubic Feet

(Reprinted by permission from Taylor & Thompson's "Concrete, Plain and Reinforced")

Proportions by Parts			Proportions by Volume			Volume of Mortar in Terms of Percentage of Volume of Stone	Average Volume of Rammed Concrete Made from One Barrel of Cement — Percentages of Voids in Broken Stone or Gravel				
Cement	Sand	Stone	Cement	Sand	Stone		50%*	45%†	40%‡	30%§	20%§
			Barrels	Cubic Feet	Cubic Feet		Cubic Feet	Cubic Feet	Cubic Feet	Cubic Feet	Cubic Feet
1	...	1	1	....	3.8	94	5.3	5.5	5.7	6.2	6.7
1	...	2	1	....	7.6	51	7.4	7.8	8.2	9.2	10.2
1	...	3	1	....	11.4	36	....	10.0	10.6	12.2	13.6
1	...	4	1	....	15.2	29	....	....	....	15.2	17.1
1	...	5	1	....	19.0	25	....	....	....	18.2	20.6
1	...	6	1	....	22.8	22	....	....	....	21.1	24.0
1	...	7	1	....	26.6	20	....	....	....	....	27.5
1	...	8	1	....	30.4	19	....	....	....	....	31.0
1	...	9	1	....	34.2	18	....	....	....	....	34.4
1	...	10	1	....	38.0	17	....	....	....	....	37.9
1	...	11	1	....	41.8	16	....	....	....	....	41.4
1	...	12	1	....	45.5	15	....	....	....	....	44.8
1	1	1½	1	3.8	5.7	99	8.5	8.8	9.1	9.7	10.3
1	1	2	1	3.8	7.6	75	9.5	9.9	10.3	11.1	11.9
1	1	2½	1	3.8	9.5	61	10.5	10.0	11.5	12.6	13.6
1	1	3	1	3.8	11.4	51	11.5	12.2	12.8	14.0	15.2
1	1½	2	1	5.7	7.6	93	10.8	11.3	11.7	12.5	13.3
1	1½	2½	1	5.7	9.5	76	11.9	12.4	12.9	13.9	15.0
1	1½	3	1	5.7	11.4	64	12.9	13.5	14.1	15.4	16.6
1	1½	3½	1	5.7	13.3	55	13.9	14.6	15.4	16.8	18.2
1	1½	4	1	5.7	15.2	49	15.0	15.8	16.6	18.2	19.9
1	1½	4½	1	5.7	17.1	44	16.0	16.9	17.8	19.7	21.5
1	1½	5	1	5.7	19.0	40	17.0	18.0	19.1	21.1	23.2
1	2	3	1	7.6	11.4	75	14.3	14.9	15.5	16.7	18.0
1	2	3½	1	7.6	13.3	65	15.3	16.0	16.8	18.2	19.6
1	2	4	1	7.6	15.2	57	16.3	17.2	18.0	19.6	21.3
1	2	4½	1	7.6	17.1	51	17.4	18.3	19.2	21.0	22.9
1	2	5	1	7.6	19.0	47	18.4	19.4	20.4	22.5	24.5
1	2	5½	1	7.6	20.9	43	19.4	20.5	21.7	23.9	26.2
1	2	6	1	7.6	22.8	40	20.4	21.7	22.9	25.4	27.8
1	2½	3	1	9.5	11.4	87	15.7	16.3	16.9	18.1	19.3
1	2½	3½	1	9.5	13.3	75	16.7	17.4	18.1	19.6	21.0
1	2½	4	1	9.5	15.2	66	17.7	18.5	19.3	21.0	22.6
1	2½	4½	1	9.5	17.1	60	18.7	19.6	20.6	22.4	24.3
1	2½	5	1	9.5	19.0	54	19.8	20.8	21.8	23.9	25.9
1	2½	5½	1	9.5	20.9	49	20.8	21.9	23.0	25.3	27.6
1	2½	6	1	9.5	22.8	46	21.8	23.0	24.3	26.7	29.2
1	2½	6½	1	9.5	24.7	42	22.8	24.2	25.5	28.2	30.8
1	2½	7	1	9.5	26.6	40	23.9	25.3	26.7	29.6	32.5
1	3	4	1	11.4	15.2	76	19.1	19.9	20.7	22.4	24.0
1	3	4½	1	11.4	17.1	68	20.1	21.0	21.9	23.8	25.6
1	3	5	1	11.4	19.0	61	21.1	22.1	23.2	25.2	27.2
1	3	5½	1	11.4	20.9	56	22.1	23.3	24.4	26.7	28.9
1	3	6	1	11.4	22.8	52	23.2	24.4	25.6	28.1	30.6
1	3	6½	1	11.4	24.7	48	24.2	25.5	26.9	29.5	32.2
1	3	7	1	11.4	26.6	45	25.2	26.7	28.1	31.0	33.8
1	3	7½	1	11.4	28.5	42	26.2	27.8	29.3	32.4	35.5
1	3	8	1	11.4	30.4	40	27.3	28.9	30.6	33.8	37.3
1	4	5	1	15.2	19.0	76	23.9	24.9	25.9	28.0	30.0
1	4	6	1	15.2	22.8	64	25.9	27.2	28.4	30.8	33.3
1	4	7	1	15.2	26.6	55	28.0	29.4	30.8	33.7	36.6
1	4	8	1	15.2	30.4	49	30.0	31.7	33.3	36.6	39.9
1	4	9	1	15.2	34.2	44	32.1	33.9	35.8	39.4	43.1
1	4	10	1	15.2	38.0	40	34.1	36.2	38.2	42.3	46.4
1	5	10	1	19.0	38.0	47	36.9	38.9	41.0	45.1	49.2
1	6	12	1	22.8	45.5	46	43.7	46.2	48.6	53.6	58.5

Note—Variations in the fineness of the sand and the compacting of the concrete may affect the volumes by 10 per cent in either direction.

*Use 50 per cent column for broken stone screened to uniform size. †Use 45 per cent column for average condition sand for broken stone with dust screened out. ‡Use 40 per cent column for gravel or mixed stone and gravel. §Use these columns for scientifically graded mixtures.

Table No. 21

Volume of Plastic Mortar Made from Different Proportions of Cement and Sand

Quantities of Materials per Cubic Yard

Reprinted by permission from Taylor & Thompson's "Concrete, Plain and Reinforced"

Relative Proportions by Volume*		Volume of Compacted Plastic Mortar						Materials for 1 Cubic Yard Compact Plastic Mortar Based on Barrel of					
		From 1 Cu. Ft. Cement			From 1 Barrel Cement			3.5 Cubic Feet		**3.8 Cubic Feet†**		4 Cubic Feet	
		Based on Portland Cement Weighing			Based on Barrel of								
Cement	Sand	108 Pounds per Cubic Foot	**100 Pounds per Cubic Foot†**	95 Pounds per Cubic Foot	3.5 Cubic Feet	**3.8 Cubic Feet†**	4 Cubic Feet	Packed Cement	Loose Sand	**Packed Cement**	**Loose Sand**	Packed Cement	Loose Sand
		cu. ft.	**cu. ft.**	cu. ft.	cu. ft.	**cu. ft.**	cu. ft.	bbl.	cu. yd.	**bbl.**	**cu. yd.**	bbl.	cu. yd.
1	0	0.93	0.86	0.80	3.2	3.2	3.2	8.31	....	8.31	....	8.31	....
1	½	1.12	1.06	1.02	3.9	4.0	4.1	6.92	0.46	6.73	0.47	6.61	0.49
1	1	1.48	1.42	1.38	5.2	5.4	5.5	5.22	0.68	5.01	0.71	4.88	0.72
1	1½	1.84	1.78	1.74	6.4	6.7	7.0	4.20	0.81	4.00	0.84	3.87	0.86
1	2	2.20	2.14	2.11	7.7	8.1	8.4	3.51	0.91	3.32	0.93	3.21	0.95
1	2½	2.56	2.50	2.47	9.0	9.5	9.9	3.01	0.98	2.84	1.00	2.74	1.01
1	3	2.92	2.86	2.83	10.2	10.9	11.3	2.64	1.03	2.48	1.05	2.39	1.06
1	3½	3.28	3.23	3.19	11.5	12.2	12.8	2.35	1.06	2.20	1.08	2.12	1.10
1	4	3.64	3.59	3.55	12.8	13.6	14.2	2.12	1.10	1.98	1.11	1.90	1.13
1	4½	4.01	3.95	3.91	14.0	15.0	15.6	1.92	1.12	1.80	1.14	1.72	1.15
1	5	4.37	4.31	4.28	15.3	16.4	17.1	1.77	1.15	1.65	1.16	1.58	1.17
1	5½	4.73	4.67	4.64	16.6	17.7	18.5	1.63	1.16	1.52	1.18	1.46	1.19
1	6	5.09	5.03	5.00	17.8	19.1	20.0	1.52	1.18	1.41	1.19	1.35	1.20
1	6½	5.45	5.39	5.36	19.1	20.5	21.4	1.41	1.19	1.32	1.21	1.26	1.21
1	7	5.81	5.76	5.72	20.3	21.9	22.9	1.33	1.21	1.23	1.21	1.18	1.22
1	7½	6.18	6.12	6.08	21.6	23.2	24.3	1.25	1.21	1.16	1.22	1.11	1.23
1	8	6.54	6.48	6.44	22.9	24.6	25.8	1.18	1.22	1.10	1.24	1.05	1.24

NOTE—Variations in the fineness of the sand and the cement, and in consistency of the mortar, may affect the values by 10 per cent in either direction.

*Cement as packed by manufacturer, sand loose.

†Use these columns ordinarily.

Table No. 22

Quantities of Materials for One Cubic Yard of Rammed Concrete Based on a Barrel of 3.8 Cubic Feet

(Reprinted by permission from Taylor & Thompson's "Concrete, Plain and Reinforced")

Proportions by Parts			Proportions by Volumes			Volume of Mortar in Terms of Percentage of Volume of Stone	Percentages of Voids in Broken Stone or Gravel														
							50%*			45%†			40%‡			30%§			20%§		
Cement	Sand	Stone	Packed Cement	Loose Sand	Loose Stone		Cement	Sand	Stone	Cement	Sand	Stone	Cement	Sand	Stone	Cement	Sand	Stone	Cement	Sand	Stone
			bbl.	cu. ft.	cu. ft.		bbl.	cu. yd.	cu. yd.	bbl.	cu. yd.	cu. yd.	bbl.	cu. yd.	cu. yd.	bbl.	cu. yd.	cu. yd.	bbl.	cu. yd.	cu. yd.
1	...	1	1	....	3.8	94	5.09	....	0.72	4.90	....	0.69	4.73	....	0.67	4.33	....	0.61	4.02	....	0.57
1	...	2	1	....	7.6	51	3.67	....	1.03	3.48	....	0.98	3.30	....	0.93	2.93	....	0.82	2.65	....	0.75
1	...	3	1	....	11.4	36	....	....	....	2.69	....	1.14	2.54	....	1.07	2.22	....	0.94	1.98	....	0.84
1	...	4	1	....	15.2	29	....	....	....	....	....	....	....	....	....	1.78	....	1.00	1.58	....	0.89
1	...	5	1	....	19.0	25	....	....	....	....	....	....	....	....	....	1.49	....	1.05	1.31	....	0.92
1	...	6	1	....	22.8	22	....	....	....	....	....	....	....	....	....	1.28	....	1.08	1.12	....	0.95
1	...	7	1	....	26.6	20	....	....	....	....	....	....	....	....	....	....	....	....	0.98	....	0.97
1	...	8	1	....	30.4	19	....	....	....	....	....	....	....	....	....	....	....	....	0.87	....	0.98
1	...	9	1	....	34.2	18	....	....	....	....	....	....	....	....	....	....	....	....	0.78	....	0.99
1	...	10	1	....	38.0	17	....	....	....	....	....	....	....	....	....	....	....	....	0.71	....	1.00
1	...	11	1	....	41.8	16	....	....	....	....	....	....	....	....	....	....	....	....	0.65	....	1.01
1	...	12	1	....	45.5	15	....	....	....	....	....	....	....	....	....	....	....	....	0.60	....	1.01
1	1	1½	1	3.8	5.7	99	3.19	0.45	0.67	3.08	0.43	0.65	2.97	0.42	0.63	2.78	0.39	0.59	2.62	0.37	0.55
1	1	2	1	3.8	7.6	75	2.85	0.40	0.80	2.73	0.38	0.77	2.62	0.37	0.74	2.43	0.34	0.68	2.26	0.32	0.64
1	1	2½	1	3.8	9.5	61	2.57	0.36	0.90	2.45	0.34	0.86	2.34	0.33	0.82	2.15	0.30	0.76	1.99	0.28	0.70
1	1	3	1	3.8	11.4	51	2.34	0.33	0.99	2.22	0.31	0.94	2.12	0.30	0.90	1.93	0.27	0.82	1.77	0.25	0.75
1	1½	2	1	5.7	7.6	93	2.49	0.53	0.70	2.40	0.51	0.68	2.31	0.49	0.65	2.16	0.46	0.61	2.03	0.43	0.57
1	1½	2½	1	5.7	9.5	76	2.27	0.48	0.80	2.18	0.46	0.77	2.09	0.44	0.74	1.94	0.41	0.68	1.80	0.38	0.63
1	1½	3	1	5.7	11.4	64	2.09	0.44	0.88	2.00	0.42	0.84	1.91	0.40	0.81	1.76	0.37	0.74	1.63	0.34	0.69
1	1½	3½	1	5.7	13.3	55	1.94	0.41	0.96	1.84	0.39	0.91	1.76	0.37	0.87	1.61	0.34	0.79	1.48	0.31	0.73
1	1½	4	1	5.7	15.2	49	1.80	0.38	1.01	1.71	0.36	0.96	1.63	0.34	0.92	1.48	0.31	0.83	1.36	0.29	0.77
1	1½	4½	1	5.7	17.1	44	1.69	0.36	1.07	1.60	0.34	1.01	1.51	0.32	0.96	1.37	0.29	0.87	1.25	0.26	0.79
1	1½	5	1	5.7	19.0	40	1.59	0.34	1.12	1.50	0.32	1.06	1.42	0.30	1.00	1.28	0.27	0.90	1.17	0.25	0.82
1	2	3	1	7.6	11.4	75	1.89	0.53	0.80	1.81	0.51	0.76	1.74	0.49	0.74	1.61	0.45	0.68	1.50	0.42	0.63
1	2	3½	1	7.6	13.3	65	1.76	0.49	0.87	1.68	0.47	0.83	1.61	0.45	0.79	1.48	0.42	0.73	1.38	0.39	0.68
1	2	4	1	7.6	15.2	57	1.65	0.46	0.93	1.57	0.44	0.88	1.50	0.42	0.84	1.38	0.39	0.78	1.27	0.36	0.72
1	2	4½	1	7.6	17.1	51	1.55	0.44	0.98	1.48	0.42	0.94	1.41	0.40	0.89	1.28	0.36	0.81	1.18	0.33	0.75
1	2	5	1	7.6	19.0	47	1.47	0.41	1.03	1.39	0.39	0.98	1.32	0.37	0.93	1.20	0.34	0.84	1.10	0.31	0.77
1	2	5½	1	7.6	20.9	43	1.39	0.39	1.08	1.31	0.37	1.01	1.25	0.35	0.97	1.13	0.32	0.87	1.03	0.29	0.80
1	2	6	1	7.6	22.8	40	1.32	0.37	1.11	1.25	0.35	1.06	1.18	0.33	1.00	1.06	0.30	0.89	0.97	0.27	0.82
1	2½	3	1	9.5	11.4	87	1.72	0.61	0.73	1.66	0.58	0.70	1.60	0.56	0.68	1.49	0.52	0.63	1.40	0.49	0.59
1	2½	3½	1	9.5	13.3	75	1.62	0.57	0.80	1.55	0.55	0.76	1.49	0.52	0.73	1.38	0.49	0.68	1.29	0.45	0.64
1	2½	4	1	9.5	15.2	66	1.52	0.54	0.86	1.46	0.51	0.82	1.40	0.49	0.79	1.29	0.45	0.73	1.19	0.42	0.67
1	2½	4½	1	9.5	17.1	60	1.44	0.51	0.91	1.37	0.48	0.87	1.31	0.46	0.83	1.20	0.42	0.76	1.11	0.39	0.70
1	2½	5	1	9.5	19.0	54	1.37	0.48	0.96	1.30	0.46	0.92	1.24	0.44	0.87	1.13	0.40	0.80	1.04	0.37	0.73
1	2½	5½	1	9.5	20.9	49	1.30	0.46	1.01	1.23	0.43	0.95	1.17	0.41	0.91	1.07	0.38	0.83	0.98	0.34	0.76
1	2½	6	1	9.5	22.8	46	1.24	0.44	1.05	1.17	0.41	0.99	1.11	0.39	0.94	1.01	0.36	0.85	0.92	0.32	0.78
1	2½	6½	1	9.5	24.7	42	1.18	0.42	1.08	1.12	0.39	1.02	1.06	0.37	0.97	0.96	0.34	0.88	0.88	0.31	0.80
1	2½	7	1	9.5	26.6	40	1.13	0.40	1.11	1.07	0.38	1.05	1.01	0.36	0.99	0.91	0.32	0.90	0.83	0.29	0.82
1	3	4	1	11.4	15.2	76	1.42	0.60	0.80	1.36	0.57	0.77	1.30	0.55	0.73	1.21	0.51	0.68	1.12	0.47	0.63
1	3	4½	1	11.4	17.1	68	1.34	0.57	0.85	1.28	0.54	0.81	1.23	0.52	0.78	1.13	0.48	0.72	1.05	0.44	0.66
1	3	5	1	11.4	19.0	61	1.28	0.54	0.90	1.22	0.52	0.86	1.17	0.49	0.82	1.07	0.45	0.75	0.99	0.42	0.70
1	3	5½	1	11.4	20.9	56	1.22	0.52	0.94	1.16	0.49	0.90	1.11	0.47	0.86	1.01	0.43	0.78	0.93	0.39	0.72
1	3	6	1	11.4	22.8	52	1.16	0.49	0.98	1.11	0.47	0.94	1.05	0.44	0.89	0.96	0.41	0.81	0.88	0.37	0.74
1	3	6½	1	11.4	24.7	48	1.12	0.47	1.02	1.06	0.45	0.97	1.01	0.43	0.92	0.92	0.39	0.84	0.84	0.35	0.77
1	3	7	1	11.4	26.6	45	1.07	0.45	1.05	1.01	0.43	0.99	0.96	0.40	0.95	0.87	0.37	0.86	0.80	0.34	0.79
1	3	7½	1	11.4	28.5	42	1.03	0.44	1.09	0.97	0.41	1.02	0.92	0.39	0.97	0.83	0.35	0.88	0.76	0.32	0.80
1	3	8	1	11.4	30.4	40	0.99	0.42	1.11	0.93	0.39	1.05	0.88	0.37	0.99	0.80	0.34	0.90	0.73	0.31	0.82
1	4	5	1	15.2	19.0	76	1.13	0.61	0.80	1.08	0.61	0.76	1.04	0.59	0.73	0.96	0.54	0.68	0.90	0.51	0.63
1	4	6	1	15.2	22.8	64	1.04	0.59	0.88	0.99	0.56	0.84	0.95	0.54	0.80	0.87	0.49	0.73	0.81	0.46	0.68
1	4	7	1	15.2	26.6	55	0.96	0.54	0.95	0.92	0.52	0.91	0.88	0.50	0.87	0.80	0.45	0.79	0.74	0.42	0.73
1	4	8	1	15.2	30.4	49	0.90	0.50	1.01	0.85	0.48	0.96	0.81	0.46	0.91	0.74	0.42	0.83	0.68	0.38	0.77
1	4	9	1	15.2	34.2	44	0.84	0.47	1.06	0.80	0.45	1.01	0.76	0.43	0.96	0.68	0.38	0.86	0.63	0.35	0.80
1	4	10	1	15.2	38.0	40	0.79	0.44	1.11	0.75	0.42	1.06	0.71	0.40	1.00	0.64	0.36	0.90	0.58	0.33	0.82
1	5	10	1	19.0	38.0	47	0.73	0.52	1.03	0.69	0.49	0.97	0.66	0.46	0.93	0.60	0.42	0.84	0.55	0.39	0.77
1	6	12	1	22.8	45.5	46	0.62	0.52	1.04	0.58	0.49	0.98	0.56	0.47	0.94	0.50	0.42	0.84	0.46	0.39	0.78

NOTE—Variations in the fineness of the sand and the compacting of the concrete may affect the quantities 10 per cent in either direction.

*Use 50 per cent columns for broken stone screened to uniform size. †Use 45 per cent columns for average conditions and for broken stone with dust screened out. ‡Use 40 per cent columns for gravel or mixed stone and gravel. §Use these columns for scientifically graded mixtures.

Table No. 23

Comparative Sizes of Wire Gauge in Decimals of an Inch

No. of Wire Gauge	Am. Steel & Wire Co.'s Steel Wire Gauge	American Standard (B. & S.)	Birmingham or Stubs	British Imperial Standard*	Old English or London
0000000	.4900	......	....	.500	.....
000000	.4615	.58000	....	.464	.....
00000	.4305	.51650	.500	.432	.....
0000	.3938	.46000	.454	.400	.4540
000	.3625	.40964	.425	.372	.4250
00	.3310	.36480	.380	.348	.3800
0	.3065	.32486	.340	.324	.3400
1	.2830	.28930	.300	.300	.3000
2	.2625	.25763	.284	.276	.2840
3	.2437	.22942	.259	.252	.2590
4	.2253	.20431	.238	.232	.2380
5	.2070	.18194	.220	.212	.2200
6	.1920	.16202	.203	.192	.2030
7	.1770	.14428	.180	.176	.1800
8	.1620	.12849	.165	.160	.1650
9	.1483	.11443	.148	.144	.1480
10	.1350	.10189	.134	.128	.1340
11	.1205	.09074	.120	.116	.1200
12	.1055	.08081	.109	.104	.1090
13	.0915	.07916	.095	.092	.0950
14	.0800	.06408	.083	.080	.0830
15	.0720	.05706	.072	.072	.0720
16	.0625	.05082	.065	.064	.0650
17	.0540	.04525	.058	.056	.0580
18	.0475	.04030	.049	.048	.0490
19	.0410	.03589	.042	.040	.0400
20	.0348	.03196	.035	.036	.0350
21	.0317	.02846	.032	.032	.0315
22	.0286	.02535	.028	.028	.0295
23	.0258	.02257	.025	.024	.0270
24	.0230	.02010	.022	.022	.0250
25	.0204	.01790	.020	.020	.0230
26	.0181	.01594	.018	.018	.0205
27	.0173	.01420	.016	.0164	.01875
28	.0162	.01264	.014	.0148	.01650
29	.0150	.01126	.013	.0136	.01550
30	.0140	.01003	.012	.0124	.01375
31	.0132	.00893	.010	.0116	.01225
32	.0128	.00795	.009	.0108	.01125
33	.0118	.00708	.008	.0100	.01025
34	.0104	.00630	.007	.0092	.00950
35	.0095	.00561	.005	.0084	.00900
36	.0090	.00500	.004	.0076	.00750
37	.0085	.00445	....	.0068	.00650
38	.0080	.00396	....	.0060	.00575
39	.0075	.00353	....	.0052	.00500
40	.0070	.00314	..	.0048	.00450

*Also called New British or English Legal Standard.

Table No. 24

American Steel & Wire Co.'s Steel Wire Gauge and Different Sizes of Wire

Diameter Inches	Am. Steel & Wire Co.'s Steel Wire Gauge	Diameter Inches	Area Sq. Inches	Pounds Per Foot	Pounds Per Mile	Feet Per Pound
1/2		.5000	.19635	.6668	3521.	1.500
	7/0	.4900	.18857	.6404	3381.	1.562
15/32		.46875	.17257	.5861	3094.	1.706
	6/0	.4615	.16728	.5681	2999.	1.76
7/16		.4375	.15033	.5105	2696.	1.959
	5/0	.4305	.14556	.4943	2610.	2.023
13/32		.40625	.12962	.4402	2324.	2.272
	4/0	.3938	.12180	.4136	2184.	2.418
3/8		.3750	.11045	.3751	1980.	2.666
	3/0	.3625	.10321	.3505	1851.	2.853
11/32		.34375	.092806	.3152	1664.	3.173
	2/0	.3310	.086049	.2922	1543.	3.422
5/16		.3125	.076699	.2605	1375.	3.839
	0	.3065	.073782	.2506	1323.	3.991
	1	.2830	.062902	.2136	1128.	4.681
9/32		.28125	.062126	.2110	1114.	4.74
	2	.2625	.054119	.1838	970.4	5.441
1/4		.2500	.049087	.1667	880.2	5.999
	3	.2437	.046645	.1584	836.4	6.313
	4	.2253	.039867	.1354	714.8	7.386
7/32		.21875	.037583	.1276	673.9	7.835
	5	.2070	.033654	.1143	603.4	8.750
	6	.1920	.028953	.09832	519.2	10.17
3/16		.1875	.027612	.09377	495.1	10.66
	7	.1770	.024606	.08356	441.2	11.97
	8	.1620	.020612	.07000	369.6	14.29
5/32		.15625	.019175	.06512	343.8	15.36
	9	.1483	.017273	.05866	309.7	17.05
	10	.1350	.014314	.04861	256.7	20.57
1/8		.125	.012272	.04168	220.0	24.00
	11	.1205	.011404	.03873	204.5	25.82
	12	.1055	.0087147	.02969	156.7	33.69
3/32		.09375	.0069029	.02344	123.8	42.66
	13	.0915	.0065755	.02233	117.9	44.78
	14	.0800	.0050266	.01707	90.13	58.58
	15	.0720	.0040715	.01383	73.01	72.32
	16	.0625	.0030680	.01042	55.01	95.98
	17	.0540	.0022902	.007778	41.07	128.60

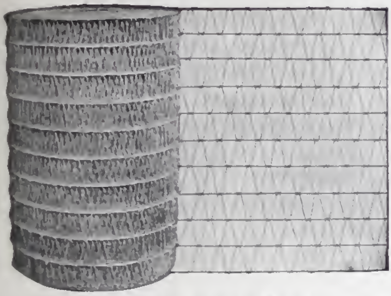
Table No. 25

Weights and Areas of Square and Round Bars and Circumferences of Round Bars

One Cubic Foot of Steel Weighing 489.6 Pounds

Thickness or Diameter in Inches	Weight of Square Bar 1 Foot Long	Weight of Round Bar 1 Foot Long	Area of Square Bar in Square Inches	Area of Round Bar in Square Inches	Circumference of Round Bar in Inches
0					
1/16	.013	.010	.0039	.0031	.1963
1/8	.053	.042	.0156	.0123	.3927
3/16	.119	.094	.0352	.0276	.5890
1/4	.212	.167	.0625	.0491	.7854
5/16	.333	.261	.0977	.0767	.9817
3/8	.478	.375	.1406	.1104	1.1781
7/16	.651	.511	.1914	.1503	1.3744
1/2	.850	.667	.2500	.1963	1.5708
9/16	1.076	.845	.3164	.2485	1.7671
5/8	1.328	1.043	.3906	.3068	1.9635
11/16	1.608	1.262	.4727	.3712	2.1598
3/4	1.913	1.502	.5625	.4418	2.3562
13/16	2.245	1.763	.6602	.5185	2.5525
7/8	2.603	2.044	.7656	.6013	2.7489
15/16	2.989	2.347	.8789	.6903	2.9452
1	3.400	2.670	1.0000	.7854	3.1416
1/16	3.838	3.014	1.1289	.8866	3.3379
1/8	4.303	3.379	1.2656	.9940	3.5343
3/16	4.795	3.766	1.4102	1.1075	3.7306
1/4	5.312	4.173	1.5625	1.2272	3.9270
5/16	5.857	4.600	1.7227	1.3530	4.1233
3/8	6.428	5.049	1.8906	1.4849	4.3197
7/16	7.026	5.518	2.0664	1.6230	4.5160
1/2	7.650	6.008	2.2500	1.7671	4.7124
9/16	8.301	6.520	2.4414	1.9175	4.9087
5/8	8.978	7.051	2.6406	2.0739	5.1051
11/16	9.682	7.604	2.8477	2.2365	5.3014
3/4	10.41	8.178	3.0625	2.4053	5.4978
3/16	11.17	8.773	3.2852	2.5802	5.6941
7/8	11.95	9.388	3.5156	2.7612	5.8905
15/16	12.76	10.02	3.7539	2.9483	6.0868

Galvanized Triangle Mesh Reinforcement for Stucco



Style 2L, 2-inch Mesh

Exact Size of Main or Longitudinal Wire

Exact Size of Diagonal Cross Wires

The above cuts show the exact sizes of the wires used in the fabric and the general appearance of the mesh itself. The main or longitudinal wires are spaced 4 inches apart and the diagonal cross wires are spaced two inches apart. This fabric can also be furnished with the cross wires spaced 4 inches instead of 2 inches apart although the closer spacing is recommended.

Galvanized Triangle Mesh is primarily a reinforcement for the stucco. By its use destructive cracks are eliminated and increased stability secured. Its superiority is shown by the large wires thoroughly galvanized, low first cost and ease of installation.

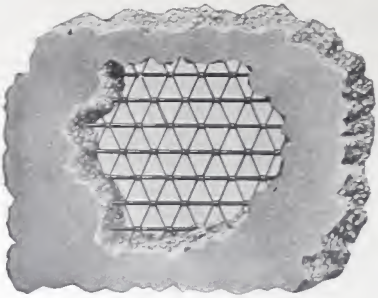
Because of the heavy coating of zinc this reinforcement can be successfully used with either cement or magnesite stucco.

Styles, Size and Spacing of Wires—Weights per Square Yard

Style Number	Longitudinal Wires		Cross Wires		Approximate Weight Pounds per Sq. Yd.
	Gauge	Spacing, Inches	Gauge	Spacing, Inches	
2L	12	4	14	2	2.84
2M	12	4	14	4	1.94

Rolls: Made regularly in rolls 150 feet long and 36 or 48 inches wide.

Quantities: Per roll: Rolls 150 feet long, 36 inches wide contain 50 square yards.
Rolls 150 feet long, 48 inches wide contain 66⅔ square yards.



The Essential Importance of Steel Wire Fabric Reinforcement for Concrete Highways

The Reinforcement of Concrete with Steel

Both join into one solid integral mass, the steel imparting its full strength throughout the concrete

Triangle Mesh Reinforcement, shown in above illustration

THE science of modern road-making is based on experience. The need for good roads is now widely realized and appreciated, and wise efforts are being made throughout the country to introduce better road systems. It is important to realize also, what constitutes a good road, and how a road can be built for all time.

From practically every standpoint it has been learned that a permanent, hard-surfaced concrete pavement is the most satisfactory. This is economical as well, because it furnishes a smooth, even, wear-resisting surface for twelve months of the year at a cost that is not excessive.

Properly laid concrete city pavements always include a reinforcement of steel fabric. For the same reason that steel reinforcement is used in the wide city pavements, it should be used in the narrow country roads.

Concrete has the quality of resisting direct wear, but it does not have the power of resisting strain brought about by the uneven settling or heaving of its earth foundation. Substances contract or expand with variation in temperature. Concrete is no exception. Such changes produce a pull that cannot be overcome by the concrete because of its comparatively low tensile strength.

Steel wire fabric having high tensile strength, is therefore placed in the concrete to reduce to a minimum the liability to rupture in the pavement. *The continual changing of the concrete slab causes openings unless they are held together by wire fabric.*

By the addition of steel wire reinforcing fabric, the originally durable, sightly and sanitary surface of the concrete is kept intact. The additional satisfaction and service obtained from a road reinforced with steel wire fabric makes the extra expense a genuine economy.

Send for book on "Wire Reinforcement Fabric in the Construction of Concrete Roads and Pavements."

Reinforced Concrete Pipe

For Industrial, Sanitary and Storm Water Sewers, Pressure Lines, Highway and Railroad Culverts, Irrigation and Drainage

The main points to be considered in pipe line are strength, economy and efficiency.

Proper strength involves thickness of wall, proportion and quality of mixture, amount, type and quality of reinforcement and correct supervision of the manufacture. The thickness of the pipe walls usually is about one-tenth of the pipe diameter. The proportion varies according to local conditions but usually is a 1:2:4 mixture. Triangle Mesh Reinforcement has for years been the standard material for all the principal pipe manufacturers in the United States and Canada including the railroads. The diagonal cross wires have an important bearing on the result as they not only aid in distributing the load, but also prevent the main carrying wires from pulling out through the concrete when the pipe is excessively loaded. No additional reinforcement need be placed lengthwise of the pipe.

Economy involves first cost, installation cost and durability. Precast reinforced concrete pipe is competitive in first cost and shows a decided saving in placing cost especially for unusual ditch conditions.

Many years of successful use have demonstrated the durability of properly made reinforced concrete pipe in the presence of sewer gases, industrial wastes and alkali soils.

Specify reinforced concrete pipe made by experienced manufacturers and reinforced with American Steel & Wire Company's Triangle Mesh Reinforcement.

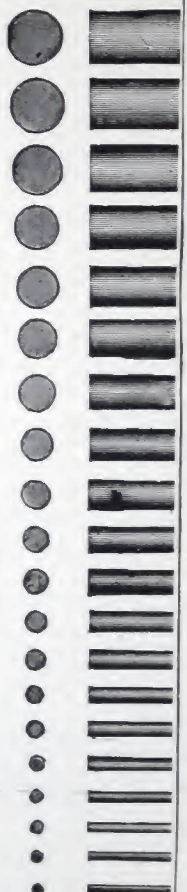
48 Inch Reinforced Concrete Pipe—Reinforced with Triangle Mesh Reinforcement.

Sizes of Wires

Decimal Equivalents

$\frac{1}{64}$=.0156	$\frac{33}{64}$=.5156
$\frac{1}{32}$=.0312	$\frac{17}{32}$=.5312
$\frac{3}{64}$=.0468	$\frac{35}{64}$=.5468
$\frac{1}{16}$=.0625	$\frac{9}{16}$=.5625
$\frac{5}{64}$=.0781	$\frac{37}{64}$=.5781
$\frac{3}{32}$=.0937	$\frac{19}{32}$=.5937
$\frac{7}{64}$=.1093	$\frac{39}{64}$=.6093
$\frac{1}{8}$=.125	$\frac{5}{8}$=.625
$\frac{9}{64}$=.1406	$\frac{41}{64}$=.6406
$\frac{5}{32}$=.1562	$\frac{21}{32}$=.6562
$\frac{11}{64}$=.1718	$\frac{43}{64}$=.6718
$\frac{3}{16}$=.1875	$\frac{11}{16}$=.6875
$\frac{13}{64}$=.2031	$\frac{45}{64}$=.7031
$\frac{7}{32}$=.2187	$\frac{23}{32}$=.7187
$\frac{15}{64}$=.2343	$\frac{47}{64}$=.7343
$\frac{1}{4}$=.25	$\frac{3}{4}$=.75
$\frac{17}{64}$=.2656	$\frac{49}{64}$=.7656
$\frac{9}{32}$=.2812	$\frac{25}{32}$=.7812
$\frac{19}{64}$=.2968	$\frac{51}{64}$=.7968
$\frac{5}{16}$=.3125	$\frac{13}{16}$=.8125
$\frac{21}{64}$=.3281	$\frac{53}{64}$=.8281
$\frac{11}{32}$=.3437	$\frac{27}{32}$=.8437
$\frac{23}{64}$=.3593	$\frac{55}{64}$=.8593
$\frac{3}{8}$=.375	$\frac{7}{8}$=.875
$\frac{25}{64}$=.3906	$\frac{57}{64}$=.8906
$\frac{13}{32}$=.4062	$\frac{29}{32}$=.9062
$\frac{27}{64}$=.4218	$\frac{59}{64}$=.9218
$\frac{7}{16}$=.4375	$\frac{15}{16}$=.9375
$\frac{29}{64}$=.4531	$\frac{61}{64}$=.9531
$\frac{15}{32}$=.4687	$\frac{31}{32}$=.9687
$\frac{31}{64}$=.4843	$\frac{63}{64}$=.9843
$\frac{1}{2}$=.5	1=1.0

Full Sizes of Plain Wire



American Steel & Wire Company's STEEL WIRE GAUGE No.	Sizes of Wire (Inches) Common Fractions	Sizes of Wire (Inches) Decimally	Millimeters (Decimally)	Weight One Mile (Pounds)	Pounds per Foot	Feet to Pound
1		.2830	7.188	1128.0	.2136	4.681
	$\frac{9}{32}$	.28125		1114.0	.211	
2		.2625	6.668	970.4	.1838	5.441
	$\frac{1}{4}$	.250		880.2	.1667	
3		.2437	6.190	836.4	.1584	6.313
4		.2253	5.723	714.8	.1354	7.386
	$\frac{7}{32}$	.21875		673.9	.1276	
5		.2070	5.258	603.4	.1143	8.750
6		.1920	4.877	519.2	.0983	10.17
	$\frac{3}{16}$	.1875		495.1	.0937	
7		.1770	4.496	441.2	.0835	11.97
8		.1620	4.115	369.6	.070	14.29
	$\frac{5}{32}$	.15625		343.8	.0651	
9		.1483	3.767	309.7	.0586	17.05
10		.1350	3.429	256.7	.0486	20.57
	$\frac{1}{8}$	.1250		220.0	.0416	
11		.1205	3.061	204.5	.0387	25.82
12		.1055	2.680	156.7	.0296	33.69
	$\frac{3}{32}$	.09375		123.8	.0234	
13		.0915	2.324	117.9	.0223	44.78
14		.0800	2.032	90.13	.0170	58.58
15		.0720	1.829	73.01	.0138	72.32
16	$\frac{1}{16}$	.0625	1.588	55.0	.0104	95.98
17		.0540	1.372	41.07	.0077	128.6
18		.0475	1.207	31.77	.006	166.2
19		.0410	1.041	23.67	.0044	223.0
20		.0348	.8839	17.05	.0032	309.6
21		.0317	.8052	14.15	.002680	373.1
22		.0286	.7264	11.52	.002182	458.4
23		.0258	.6553	9.374	.001775	563.3
24		.0230	.5842	7.450	.001411	708.7
25		.0204	.5182	5.861	.001110	900.9
26		.0181	.4597	4.614	.0008738	1144.
27		.0173	.4394	4.215	.0007983	1253.
28		.0162	.4115	3.696	.0007000	1429.
29		.0150	.3810	3.169	.0006001	1666.
30		.0140	.3556	2.760	.0005228	1913.
31		.0132	.3353	2.454	.0004647	2152.
32		.0128	.3251	2.307	.0004370	2288.
33		.0118	.2997	1.961	.0003714	2693.
34		.0104	.2642	1.523	.0002885	3466.
35		.0095	.2413	1.271	.0002407	4154.
36		.0090	.2286	1.141	.0002160	4629.

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THE quality of AMERICORE WIRE is such as to make it an absolute standard for interior wiring and to give the best possible fire protection.

Every foot is carefully inspected by us in the various stages of manufacture, and when completed, is finally examined and labeled under the direction of the Underwriters' Laboratories.

We are prepared to furnish this wire in all sizes of conductors, both solid and flexible, from warehouses conveniently located for quick delivery to all parts of the country.

WE present these wires as the result of many years of exhaustive research and test under *service* conditions, assuring the greatest efficiency over the *longest period of usage.*

The specifications of this wire are adequate for the most ***extreme requirements of indoor use*** in high-class structure as well as for the most ***exacting outdoor exposure.***

Send for Booklet fully describing

Flat Wire, Flat Cold Rolled Steel

IN all widths up to 16 inches, for shaping into all forms of manufacture in automatic machines or otherwise, such as butts, hinges, tubes, roller skates, keys, typewriter, sewing, adding machines, and automobile parts, cream separator discs, buttons, stove and show case trimmings, gun parts, wire chair rims, go-cart parts and any difficult or plain forming where flat steel of great ductility, strength, finish and uniformity are required.

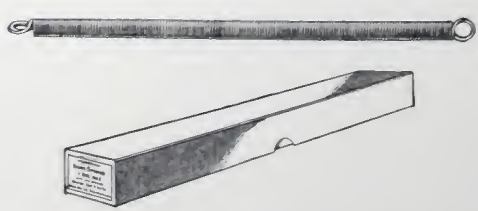
"Flat Wire Bulletin" mailed free

Clock **Motor**
Furniture
Agricultural, Automobile
and all kinds
of
Fine and Heavy Springs

Springs Catalogue furnished

Perfection Door Springs

For Screen Doors



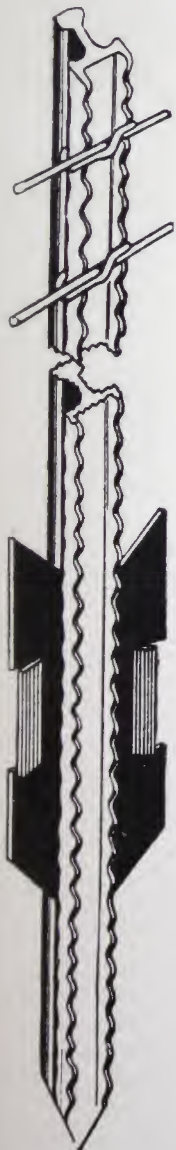
The best steel is used in the manufacture of these springs, ensuring permanent resiliency and freedom from breakage. The spring is well adapted for screen doors or other doors.

BANNER

—FORMERLY ARROW

T-STEEL
R. R. RAIL
SECTION

POSTS



Better fence posts mean better fences—less repairs, less loss, less yearly cost—more protection and more profit. Banner T-Steel Fence Posts are built like a railroad rail—the strongest post construction known.

The strongest fence post ever made.

Its Anchor Plates insure firm anchorage in the ground. Easily driven and firmly set with an ordinary steel sledge.

Wires easily attached to post and firmly locked with patent clamps.

Affords secure protection for cattle and crops.

Most economical because it lasts the longest.

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